

Geophilus bilineatus, *Peters, Reise Mossam., Ins.* p. 531, pl. xxiii. fig. 4.

Orphnæus lividus, *Meinert, Nat. Tidskr.* (3) vii. p. 19.

Orphnæus brasiliensis, *id. ibid.* p. 20.

Orya xanti, *Tömösvary, Term. füzetek*, ix. p. 64 (1885).

This species is found in all tropical countries, and is perhaps the commonest in collections of all exotic Geophilidæ.

Mr. Bollman has recorded it from Cuba, and Mr. Cockerell has sent it to the British Museum from Jamaica.

28. NOTIPHILIDES MAXIMILIANI (*Humb. & Sauss.*).

Notiphilus Maximiliani, *Humb. & Sauss. Rev. et Mag. Zool.* (2) xxii. p. 205; *id. Etudes sur les Myr.* p. 141, pl. vi. fig. 22.

Notiphilides Maximiliani, *Latzel, Die Myr. Oest.-Ung. Monarchie*, i. p. 20; *Meinert, Proc. Am. Phil. Soc.* 1886, p. 233.

An example of this species, which has hitherto been recorded only from Central America, has been sent to the British Museum from Trinidad.

Contributions to our Knowledge of the Arthropod Fauna of the West Indies.—Part III. Diplopoda and Malacopoda, with a Supplement on the Arachnida of the Class Pedipalpi. By R. I. POCOCK, of the Natural History Museum. (Communicated by W. PERCY SLADEN, Sec. Linn. Soc.)

[Read 16th March, 1893.]

(PLATES XXXVII.—XL.)

I. DIPLOPODA.

UNDOUBTEDLY the most interesting and important feature in the Antillean Diplopod fauna brought to light by the collectors employed by the Committee for the Exploration of the Lesser Antilles (*vide antea*, p. 374) is the discovery, or rather re-discovery, of *Glomeridesmus*. This genus has been a puzzle to systematists for upwards of half a century, no one having been able to assign to it a position in any of the recognized families. There is no doubt, however, that it should constitute a distinct family of its own, occupying a position between the groups to which I have given the names *Oniscomorpha* and *Helminthomorpha*. Its affinities, nevertheless, appear to be rather with the former than with the latter, on account of the absence of

copulatory feet on the 7th segment, and the incompleteness of the anal segment.

The collector, Mr. H. H. Smith, may also be congratulated upon the discovery of *Polyxenus*, which is new to the Neotropical Fauna. The genus *Siphonotus*, too, which has been long lost sight of, is worthy of special mention.

These three forms are all of very small size, and they may be taken as probably a fair criterion of what may yet be accomplished in this group if collectors will pay attention to the minute as well as the more striking species.

In the present state of our knowledge of the Neotropical Diplopod fauna, it is impossible to enter into a detailed comparison between that of the Antilles and of any other area of the Region. As a rule the species of this group are very restricted in range. This is well shown in the present instance by the fact that in only one or two cases is a species found beyond the limits of a single island. Thus in the case of Dominica, St. Vincent, Santa Lucia, and Grenada, with the Diplopod fauna of which we may now perhaps consider ourselves fairly well acquainted, it is noticeable that each seems to have its peculiar species of *Rhinocricus*. In Dominica, *R. leucostigma* is very abundant; in St. Vincent *R. macropus* and *R. vincentii* alone occur; while in Santa Lucia many species were found which did not extend to the neighbouring islands. Most of these species, however, are obviously very closely related to each other, and they belong to a group which is apparently rather characteristic of the northern parts of S. America.

Class PSELAPHOGNATHA.

Family POLYXENIDÆ.

POLYXENUS LONGISETIS, sp. n. (Pl. XXXVII. fig. 1.)

Colour (in alcohol) pale; the setæ greenish.

The body slightly attenuated posteriorly, with 10 dorsal plates visible between the head and the posterior tuft of setæ, the last plate narrower than the preceding one and sometimes appearing to be concealed inside it.

The antennæ very long, projecting on each side far beyond the sides of the body; the setæ on the lateral processes very long; the posterior tuft of setæ much narrower than in *P. lagurus*.

Locality. Mustique Island, under decaying leaves; St. Vincent (Ballein, north end of island), in bed of stream beneath sod, on rock (*H. H. Smith*).

Class **CHILOGNATHA.**

Order LIMACOMORPHA, *Pocock*.

Family GLOMERIDESMIDÆ, *Latzel*.

Body consisting of 19–20 segments; the segments subequal in size and subsimilar in form, none of them being abruptly larger than the rest, although they decrease in size from the middle of the body to its anterior and posterior ends.

Head convex and elongate from above downwards; the antennæ moderately long, consisting of 7 subequal segments.

Eyes apparently represented by a large circular depression above and behind the base of the antennæ*; at the bottom of this depression, along the posterior portion of it, is a curved series of (4) colourless tubercles, which perhaps are ocelli.

The *mandibles* well developed, apparently without the basal segment or *cardo*; the *gnathochilarium* with a large T-shaped sclerite representing the mentum and promentum; the lingual lobes short and contiguous; the stipites widely separated throughout their extent as in *Glomeris*, each tipped with two malæ; the hypostoma large and crescentic.

Each segment, except the last, consisting of a vaulted tergal piece and a free pleura on each side. The first four furnished with a single pair of legs each; the rest with two pairs of legs, except the last, which is apodous and is represented merely by a tergal sclerite.

No tracheal plates (pedal laminæ) lying between the pleuræ and the bases of the legs.

The *legs*, including the enlarged basal segment, consist of 6 segments, of which the second, fourth, and fifth are short, the third and sixth long.

In the male the legs of the seventh segment are not modified for copulatory purposes, but the last pair (*i. e.* the posterior pair of the penultimate segment) are shortened, thickened, and capable

* This organ seems to be the homologue of the horseshoe-shaped 'sensory' organ of *Glomeris*.

of retraction inside the segment that bears them; each consists apparently of four segments, the distal of which is tipped by a long seta, which looks as if it were the distal segment of a normal leg immensely reduced in thickness.

There are two large penes, capable of protrusion, between the second and third pairs of legs.

Repugnatorial pores not developed.

There are no chitinous anal valves or anal sternite, the integument round the anus being membranous.

I recognize two genera belonging to this family. They may be characterized as follows:—

- a. The bases of the antennæ closer together;
the antennal socket closed behind ZEPHRONIDESMUS.
Type, *sumatranus*, Poc.
- b. The bases of the antennæ separated by a
wider frontal space; the antennal socket
open behind GLOMERIDESMUS, Gerv.
Type, *porcellus*, Gerv.

Unfortunately I can only judge of the characters of *Glomeridesmus* from the St. Vincent species known to me. It may, however, be assumed as probable, on geographical grounds, that this species will prove to be congeneric with the Colombian species *porcellus*.

Genus GLOMERIDESMUS, *Gervais & Goudot*.

Glomeridesmus, *Gervais & Goudot*, *Ann. Soc. Ent. Fr.* (2) ii. p. xxvii (1844); *ibid. Ann. Sci. Nat.* (3) ii. p. 62, pl. v. figs. 4-6; *Gervais, Ins. Apt.* iv. p. 87, pl. 44. fig. 6.

GLOMERIDESMUS MARMOREUS, sp. n. (Pl. XXXVII. figs. 2-2m.)

Colour blackish grey, symmetrically spotted with yellow; head black, with a transverse yellow band across the summit, and a yellow labrum; lower surface pale, antennæ fuscous.

Head smooth and shining. Antennæ rather short, the 3rd to the 6th segments constricted proximally.

The first tergite evenly narrowed laterally, about as wide as the head. The rest of the tergites evenly arched, lightly transversely ridged, ridges curving abruptly backwards laterally; the posterior border straight; the posterior angle rectangular, but at the posterior end of the body produced into a backwardly-directed spike, which is particularly noticeable on the last

segment but one. There is an indistinct row of short setæ running transversely along the posterior third of the tergites.

The *pleuræ* are finely and transversely ridged in front like the terga; their posterior borders are finely serrate and distinctly angled.

The penes are long, nearly white, tapering and furnished with close-set transverse series of fine short setæ.

Length 7 mm., width 1·7 mm.

Locality. St. Vincent (*H. H. Smith*).

Mr. Smith obtained a considerable number of specimens which bear the following labels:—Leeward side of island, 1000 ft.; Richmond Valley, 1800 ft.; Mountain Forest, 2800 ft. and 3000 ft. In the latter two cases it is stated that the animals were found under rotting leaves.

Order HELMINTHOMORPHA.

Suborder CALLIPODOIDEA.

Fam. nov. STEMMIULIDÆ.

(Pl. XXXVII. figs. 3-3 c.)

On a previous occasion I referred the genus *Stemmiulus* to the Callopodidæ* in preference to leaving it in the Iulidæ, where it was placed by Karsch. But further reflection and study have convinced me that perhaps the affinities of this peculiar genus are best expressed by the establishment of a special family for its reception.

The family differs from the Callipodidæ in having the eyes composed of only one or two ocelli on each side, in the structure of the gnathochilarium (*cf.* figure), in the partial or complete freedom of the pleuræ, in having the terga almost undivided by a transverse groove, &c.

* I here follow Mr. Bollman (Bull. U. S. Nat. Mus. no. 46, p. 189, 1893) in regarding the genus *Callipus* of Risso as synonymous with *Lysiopetalum* of Brandt. The adoption of this view necessitates the change of the family name *Lysiopetalidæ* to *Callipodidæ*, and since Bollman has created the superfamily Callipodoidea for the family, I propose to follow substantially the same course; but I prefer to call the group a suborder, equal in value to the Iuloidea, Pocock, or Chordeumoidea (Cook & Collins), and consequently, for the sake of uniformity, I call it Callipodoidea. The suborder will contain the Stemmiulidæ as well as the Callipodidæ.

*STEMMIULUS COMPRESSUS, *Karsch, Zeits. Naturwiss.* (3) vi. pp. 11, 12.

Locality. Porto Rico.

Two Neotropical species of the genus *Stemmiulus* have been described: the first, named *bioculatus* by Gervais, was from Colombia; the second is the species mentioned above from Porto Rico. The latter I have not seen; but it appears to differ from the Colombian form in possessing two eyes on each side of the head. Species to which an * is prefixed have not been seen by the writer.

Suborder COLOBOGNATHA.

Family SIPHONOPHORIDÆ.

Genus SIPHONOPHORA.

*SIPHONOPHORA PORTORICENSIS, *Brandt.*

Siphonophora portoricensis, *Brandt, Bull. Ac. St. Pétersbourg*, i. (1837) p. 179; *Gervais, Apt.* iv. p. 209 (1847); *C. Koch, Die Myriapoden*, i. p. 90, fig. 78 (1863); *Peters, Mon. Ak. Wiss. Berlin*, p. 549 (1864).

Body linear, hairy. The antennæ projecting as far as the apex of the rostrum. The first tergite mesially emarginate in front, and as long as the two following segments.

Number of segments 71-72.

Length 20 mm., width 1 mm.

Locality. Porto Rico.

*SIPHONOPHORA CUBANA, *Karsch, Mitth. Münch. ent. Ver.* 1880, p. 144.

Somewhat depressed, brown; head, rostrum, antennæ, and legs flavous. Rostrum longer than the head, the antennæ scarcely longer than the rostrum, clavate; first segment not twice as wide as the head, deeply emarginate in front, not longer along the dorsal middle line than the second segment; the segments dorsally tolerably thickly covered with short setiform hairs.

Length 7-8 mm.

Locality. Cuba.

Appears to differ from *S. portoricensis* of Brandt in its much smaller size, wider head, and much shorter rostrum.

This species was looked upon by Bollman (*Proc. U. S. Nat. Mus.* 1888, p. 335), who also had it from Cuba, as synonymous with *S. portoricensis* of Brandt. I prefer, however, at present

at least, to look upon the two as distinct. I have seen no specimens which justify Bollman's views on the variability of the length of the rostrum.

SIPHONOPHORA TENUICORNIS, sp. n. (Pl. XXXVII. fig. 4.)

Colour entirely ochraceous.

The *rostrum* long and slender, about twice as long as the head, lightly curved. *Antennæ* long and slender, only gradually and slightly incrassate.

Number of segments about 106.

Length about 20 mm.

Locality. St. Vincent (*H. H. Smith.*)

"Forest, Morne a Garou, 1500 ft. In rotten wood."

This species differs from *S. luteola*, Gerv., and *S. mexicana*, Sauss., the only American species of the genus that are known to me, in the length and slenderness of its antennæ.

Family POLYZONIDÆ.

Genus SIPHONOTUS.

SIPHONOTUS PURPUREUS, sp. n. (Pl. XXXVII. fig. 5.)

Colour (in alcohol) a purplish red; legs pale.

Body elongate and slender, not entirely concealing the legs.

Head triangular, gradually narrowed to a pointed rostrum, apparently furnished on each side with two large, black, prominent eyes, the upper of which are covered by, but visible through, the first tergite. *Antennæ* considerably longer than the head and very thick, being almost of a uniform thickness throughout. The segments smooth and polished; the anal segment much narrower than the one that precedes it. *Legs* tolerably long.

Number of segments 37-44.

Length up to about 7 mm.

Locality. St. Vincent (*H. H. Smith.*)

"Mountain forest, 2500 ft. Under bark. Colour light purple."

This species appears to me to differ generically from the Palæartic *Polyzonium germanicum*, since it is much more slender and has fewer eyes. There can be little doubt that it is congeneric with the species to which Brandt gave the generic name *Siphonotus*.

Suborder IULOIDÆA.

Family IULIDÆ (s. s.).

[= Iulinæ, *Bollman* + Paraiulinæ, *Bollman* + ? Nemasominæ, *Bollman*; *Bollman*, *Bull. U. S. Nat. Mus.* no. 46, p. 156 (1893).]

Genus IULUS.

*IULUS CURIOSUS, *Karsch, Zeits. Naturwiss.* (3) vi. p. 15.

♀. Moderately slender. Grey; feet testaceous and antennæ black. Head smooth; antennæ surpassing the second segment; collum laterally tolerably widely rounded, nearly reaching the inferior margin of the second ring. The sulci on the segments deep, the anterior area smooth, the posterior tolerably densely longitudinally sulcate. Pores large, scarcely above the middle of the side, immediately in front of the sulcus. Anal tergite posteriorly angled; valves hairy, feebly convex.

Number of segments 47.

Length 36 mm.

Locality. Porto Rico.

*IULUS CÆSAR, *Karsch, Zeits. Naturwiss.* (3) vi. p. 18.

Colour fusco-brunneous, nearly concolorous.

Head smooth; clypeus with two foveæ and a few striæ.

Collum sensibly angularly rounded, not reaching the inferior border of the second ring, marked with abbreviated sulci, forming three marginal folds. The segments completely sulcate, the anterior portion sculptured with fine striolæ, the posterior portion tolerably densely striate, the striæ above not attaining the posterior portion. The pores high above the middle of the side, a little behind the sulcus. Anal tergite forming a very acute caudal process, which surpasses the valves a little; valves and tail densely hairy.

Number of segments 60.

Length 70 mm.

Locality. Porto Rico.

These two species, whether rightly or wrongly referred to the genus *Paraiulus* by *Bollman* I cannot say, may be easily separated as follows:—

- a. The repugnatorial pores situated in front of the transverse sulcus; anal tergite not surpassing the valves *curiosus*.
- b. The repugnatorial pores situated behind the transverse sulcus; anal tergite caudate, surpassing the valves. *cæsar*.

Family CAMBALIDÆ.

[=Cambalinæ, *Bollman*.]

Genus NANNOLENE, *Bollman, Ann. New York Acad.* iv. p. 39 ;
Ent. Am. ii. p. 225.

*NANNOLENE CUBENSIS, *Bollman, Proc. U. S. Nat. Mus.* 1888,
p. 335.

“Brownish-blue, with the border of the segments brown; antennæ and legs light brown, an indistinct row of light spots on each side.

“Eyes composed of about 16 ocelli, arranged in three transverse rows. Antennæ and legs stouter than in the Californian species, from which *cubensis* further differs in that the circular depressions which mark the transverse sulcus on the terga are continued only up to the pore and not over the dorsum.

“Number of segments 47.

“*Locality.* Cuba.”

NANNOLENE DOMINICANA (*Pocock*).

Spirostreptus dominicanus, *Pocock, Ann. Mag. Nat. Hist.* (6) ii.
pp. 478, 479, pl. xvi. fig. e.

Colour black or banded with fuscous; lower half of the head pale; antennæ and legs nearly white.

Antennæ short, shorter than the head, surpassing the collum. *Eyes* well developed, composed of about three transverse rows of well-defined ocelli. The posterior half of the segments distinctly higher than the anterior. The longitudinal striæ at the anterior extremity of the body reaching up to the pore, falling farther and farther short of it towards the hinder end. Pores conspicuous, beginning on the 5th segment, above the middle of the side. *Sterna* smooth.

Locality. Dominica (*G. A. Ramage*).

The above remarks are intended to supply deficiencies in my previous description of this species, which I erroneously referred to the genus *Spirostreptus*.

Family SPIROSTREPTIDÆ.

[=Spirostreptinæ, *Bollman, loc. cit.*]

Genus SPIROSTREPTUS.

*SPIROSTREPTUS VENTRALIS, *Porath, Bih. Sv. Vet.-Akad. Handl.* iv. no. 7, p. 42.

“Pale cinereous, posterior part of segments flavescent; legs and antennæ ochraceous.

"Slender, sublinear; head with sulcus obsolete; forehead rugulose anteriorly; four setigerous punctures over the labrum. Eyes composed of about 80 ocelli, arranged in 5 or 6 rows, separated by a distance equal to a diameter. Antennæ short. The lateral portion of the collum dilated inferiorly, so as to be lightly sinuate in front and behind; anterior angle rounded, posterior rectangular or subacute, with two complete sulci. Anal segment coriaceous, bluntly angled, valves marginate; sternite very widely angled. The rest of the segments finely coriaceous; the posterior part lightly striate almost up to the pores; sterna striate.

"Length 93 mm., width 5.

"Number of segments 55.

"*Locality.* St. Thomas."

*SPIROSTREPTUS SCULPTURATUS, *Karsch, op. cit.* p. 39.

♀. Slender, brown, collum flavo-limbate, posterior border of rings flavous, legs and antennæ testaceous; face smooth; collum laterally narrowed, its anterior lateral margin convex, posterior angle nearly rectangular, three marginal sulci forming flavous folds; segments deeply sulcate; the median and posterior part adorned with very fine close-set longitudinal sulci; laterally striate up to the pores; pores tolerably large, the sulci sinuate behind them; anal segment nearly smooth, shining, posteriorly widely rounded, scarcely angled; anal valves with lightly compressed margins; antennæ reaching the sixth ring.

Number of somites 58.

Length 55 mm.

Locality. Porto Rico.

*SPIROSTREPTUS ABSTEMIUS, *Karsch, op. cit.* p. 36.

"Slender, nearly black, legs and antennæ reddish brown; face very convex; sides of the collum widely rounded, bisulcate; rings deeply sulcate, nearly smooth, the posterior part sulcate beneath, above and at the sides very lightly longitudinally striolate and punctulate; anal tergite posteriorly roundly angled, valves convex, margins deeply and widely sulcate; antennæ reaching the third ring in female and surpassing it in male.

"Number of somites about 50."

Locality. ? Cuba.

*SPIROSTREPTUS NITIDUS, *Daday, Term. fuzetek*, xiv. p. 137, pl. vii. fig. 5.

“Colour: the posterior portion of the segments brownish black bordered with ferruginous, the anterior flavous; legs and antennæ fusco-brunneous.

“Body moderate, a little attenuate anteriorly and posteriorly.

“Head subrugose below, with four pores; a slender sulcus above. Antennæ a little surpassing the third segment; eyes composed of about 63 ocelli arranged in seven transverse series.

“First tergite laterally subtruncate, the anterior angle rectangular, the posterior nearly so, with four complete and one incomplete sulcus.

“Segments distinctly sulcate, the posterior portion densely punctulate above, sulcate below; the anterior portion transversely striate.

“Anal tergite not surpassing the valves; valves convex, compressed marginally. Pores very small, behind the sulcus.

“Number of segments 60-61.

“Length 130-135 mm., width 8-10 mm.

“*Locality*. Trinidad.”

SPIROSTREPTUS ANTILLANUS, sp. n. (Pl. XXXVIII. figs. 1-1 *d.*)

? Sp. nitidus, *Daday, cf. supra*.

Colour black or very deep chocolate-brown; the anterior border of the collum and the posterior border of the rest of the tergites very narrowly ferruginous; legs and antennæ fuscous, in ♂ ferruginous.

♀. *Head* rugulose below, smooth above.

Eyes separated by a space that is less than a diameter, internally acutely angled, composed of about six transverse rows of ocelli.

Antennæ a little longer than the face, just overlapping the 2nd segment. *First tergite* laterally tolerably evenly rounded, with a marginal sulcus and two other complete sulci, besides a varying number of shorter incomplete sulci.

The rest of the *segments* transversely striolate in front, closely and very finely punctulate behind, the transverse sulcus complete and marked with punctures. The longitudinal striæ extending about halfway up to the pore. *Sterna* smooth. *Pores* minute, well behind the sulcus.

Anal tergite posteriorly bluntly angled, not surpassing the

valves, marked with a transverse constriction. *Valves* convex, with strongly compressed margins. *Sternite* posteriorly angular, defined by a sulcus.

Legs with two, three, or more setæ on the lower surface of each segment.

♂. Face rather smoother than in the female, with the antennæ a little longer; legs with the penultimate and antepenultimate segments padded; anterior border of collum produced.

Copulatory feet as in fig. 1 *d*.

Number of segments: ♀, 60-63; ♂, 59-63.

♀, length up to 150 mm., width 9.5; ♂, length up to 70.

Localities. St. Thomas (in Brit. Mus.); Grenada (*H. H. Smith* and *Sherring*).

The following label accompanies some of Mr. Smith's specimens:—"Windward side, below 500 ft.; March-July. Common on logs, &c."

This species is unquestionably very nearly related to *Sp. nitidus* of Daday from Trinidad; but although no differential characters are mentioned in the description of this last-named form, it is, I think, wise to look upon the two as provisionally distinct, at least until the male of the Trinidad form comes to light and settles the point.

Sp. antillanus may be recognized from *Sp. ventralis* by its smooth sterna; from *Sp. sculpturatus* by the absence of sulcate sculpturing on the dorsum, by its shorter antennæ, different colour, &c.; and from *Sp. abstemius* also by the sculpturing, difference in the number of segments, &c.

Family SPIROBOLIDÆ.

[= Spirobolinæ of *Bollman*, *loc. cit.*; Spirobolidæ (in part), *Verhoeff*, *Zool. Anz.* xvi. p. 481, 1893.]

The West-Indian species of this family fall into the following four genera:—

- a*. Labral pores 3 to 5 on each side; first tergite laterally narrowed; no scobina SPIROBOLUS, Br. (s. s.).
Type, *Bungii*, Brandt.
- b*. Labral pores 2+2.
- a*¹. First tergite laterally acutely angled; no scobina TRIGONIULUS, nov.
Type, *Goësi*, Por.

♂¹. First tergite widely rounded; scobina generally present.

α². Anal somite normally constructed . . . RHINOCRICUS, Karsch.
Type, *parcus*, Karsch.

♂². Anal valves closing nearly transversely;
the sternite enormously thickened. . . THYROPROCTUS, nov.
Type, *Townsendi*, sp. n.

Genus SPIROBOLUS.

*SPIROBOLUS MULTIF[P]ORUS, *Karsch, op. cit.* p. 58.

“Colour fusco-brunneous, the collum, antennæ, legs, posterior margin of the segments, and the anal valves pale brown.

“Small and slender.

“Head smooth; pores 4+4 or 5+5; antennæ not surpassing the collum.

“Collum laterally narrowed, widely rounded, almost touching the margins of the second segment, with a marginal sulcus. Segments very smooth; the sulcus obsolete dorsally; the anterior portion smooth, the posterior longitudinally sulcate beneath. Pores large, only just in front of the sulcus, above the middle of the side. Anal tergite subacute posteriorly, scarcely surpassing the convex valves.

“Number of segments 39.

“Length of body 25 mm.

“*Locality.* Porto Rico.”

Genus TRIGONIULUS.

TRIGONIULUS GOËSI (*Porath*).

Spirobolus Goësi, *Porath, Bih. Sv.-Vet. Akad. Handl.* iv. no. 7, p. 36;
id. Ann. Soc. Ent. Belg. xxxii. p. 244.

S. dominicæ, *Pocock, Ann. Mag. Nat. Hist.* (6) ii. pp. 481-483,
pl. xvi. fig. 7.

? *S. sanctæ-luciæ*, *Bollman, Proc. U. S. Nat. Mus.* 1888, p. 214.

The British Museum has examples of this widespread tropical species from Hayti and Dominica. Porath has recorded it from St. Bartholomew, and the type of Bollman's species was from St. Lucia. This species, which has been intelligibly described in the papers mentioned in the above list, may be always recognized by its uniform earthy or brick-red colour, its laterally-narrowed collum, and its characteristic sculpturing, which takes the form of a network of crescentic or subcircular striæ.

Genus RHINOCRICUS.

Synopsis of the Species.

- a.* Anterior border of the segments not furnished with circular or crescentic impressions (scobina).
- a*¹. The anal tergite acutely angled behind; the transverse sulcus complete dorsally; black, with median dorsal series of pale spots. *Ramagei*, sp. n.
- b*¹. The anal tergite bluntly rounded behind.
- a*². The transverse sulcus deep and complete dorsally *mandevillei*, sp. n.
- b*². The transverse sulcus obsolete or very weak dorsally.
- a*³. Collum with strongly marginate border *politus*, Por.
- b*³. Collum with border scarcely marginate *Gossei*, sp. n.
Townsendi, sp. n.
- b.* Anterior border of some of the segments furnished with scobina.
- a*⁴. Clypeus very deeply excised *excisus*, Karsch.
- b*⁴. Clypeus lightly and normally excised.
- a*⁵. The segments not furnished with a second transverse groove in front of the ordinary sulcus (not always strictly true of *arboreus*).
- a*⁶. The posterior border of the segments above the scobina bisinuate; no caudal process.
- a*⁷. Pores scarcely above the middle of the side; scobina reaching only to the 12th segment *parcus*, Karsch.
- b*⁷. Pores well above the middle of the side; scobina reaching to the 24th segment *holomelanus*, sp. n.
- b*⁶. The posterior border of the tergites not bisinuate.
- a*⁸. The anal tergite not produced into a process surpassing the valves.
- a*⁹. Species of large size, from 75-163 mm. in length, and with from 47-54 segments.
- a*¹⁰. Antennæ long, reaching the 3rd segment *domingensis*, Sauss.
- b*¹⁰. Antennæ short, scarcely surpassing the collum *Maltzani*, sp. n.
Probably also *haitensis*
and *Duvernoyi*.

- b*⁹. Species of small size, less than 40 mm. in length, and with fewer than 47 segments *solitarius*, sp. n.
- b*³. The anal tergite surpassing the valves.
- a*¹¹. Caudal process short, segments 40-42.
- a*¹². Legs long, antennæ reaching the fourth ring *gracilipes*, Karsch.
- b*¹². Legs short, antennæ not reaching the fourth ring *grenadensis*, sp. n.
- b*¹¹. Caudal process long; segments over 50; legs very long.
- a*¹³. Posterior part of the segments not elevated *arboreus*, Sauss.
- b*¹³. Posterior part of segments elevated *macropus*, sp. n.
- b*⁵. The area of the dorsum in front of the transverse sulcus, or in front of its position when obsolete, crossed by a second sulcus.
- a*¹⁴. The posterior transverse sulcus complete dorsally, at least on the segments in the middle of the body.
- a*¹⁵. The anterior transverse sulcus weak and often interrupted, the posterior weaker; anal tergite not surpassing the valves, and not acutely produced; black with brown legs *leptopus*, sp. n.
- b*¹⁵. The two transverse sulci complete and deep on nearly all the segments; anal tergite produced into a narrower or wider caudal process, which surpasses the valves.
- a*¹⁶. The anterior transverse sulcus rising on each side from the lateral portion of the posterior sulcus considerably below the pore; colour black, with a median dorsal flavous spot, and a lateral flavous spot on the pore *leucostigma*, sp. n.
- b*¹⁶. The anterior transverse sulcus rising on each side in front of and on a level with the pore; the segments distinctly flavo- or ferrugino-cingulate.
- a*¹⁷. Caudal process considerably surpassing the valves, the area of the segments behind the posterior sulcus flavous *monilicornis*, Por.

- b*¹⁷. Caudal process scarcely if at all surpassing the valves; only the posterior border of the segments ferruginous *consociatus*, sp. n.
- b*¹⁴. The posterior transverse sulcus obsolete dorsally on all or most of the segments.
- a*¹⁸. Anal tergite acutely angled posteriorly.
- a*¹⁹. The transverse sulcus conspicuous laterally; colour as in *monilicornis*; flavo-cingulate *anguinus*, sp. n.
- b*¹⁹. The transverse sulcus obsolete or nearly so on most of the segments; the upper surface of the segments dark, with a flavous spot on each side of the middle line.
- a*²⁰. Segments 48-52; colour less pronounced *serpentinus*, sp. n.
- b*²⁰. Segments 40-43 *grammostictus*, sp. n.
- b*¹⁸. Anal tergite not acutely produced.
- a*²¹. The posterior portion of the segments flavo- or ferrugino-cingulate.
- a*²². The segments distinctly punctulate or striolate; anal segment black *vincentii*, sp. n.
- b*²². The segments smooth and polished, at least dorsally; anal segment flavous or lurid *Cockerellii*, sp. n.
- b*²¹. The segments ornamented with a median dorsal black band and a second black band on each side on a level with the pore *sabulosus*, sp. n.

*RHINOCRICUS POLITUS, *Porath, Ann. Soc. Ent. Belg.* xxxii. p. 243.

"Colour fusco-olivaceous, the posterior border of the segments narrowly pale; feet and antennæ pale.

"*Head* nearly smooth; sulcus mesially interrupted; pores 2+2; eyes rounded, composed of about 35 ocelli, separated by a space equal to about three diameters. *Antennæ* short, scarcely reaching the margin of the collum.

"*Collum* with widely-rounded lateral portion, thickly margined. The following segments dorsally and laterally very smooth and polished, striolate inferiorly above the legs; sterna striate, transverse sulcus distinct only above the legs, obsolete laterally and

above. *Pores* large, in the anterior part of the segment, above the middle of the side, the first lower than the rest. The anal tergite posteriorly widely and obtusely angled, not surpassing the valves; valves compressed; margins lightly reflexed, sternite apically rounded. *Legs* short, with a single seta below each segment.

“Number of segments 46.

“Length 77 mm., width 8.

“*Locality*. Antigua.”

RHINOCRICUS RAMAGEI, sp. n.

Colour black or slate-grey, with a pale spot in the middle of the dorsum; the posterior border of the somites is inferiorly obscurely ferruginous; antennæ fuscous; legs flavous.

Body short and robust.

Head: antennæ, collum, &c. normally constructed, but the eyes much less clearly defined.

The segments smooth, at most minutely punctulate, the longitudinal striolæ scarcely extending at all up the sides of the body; the anterior portion scarcely sculptured, the sulcus weak but complete, except at the hinder end of the body, without a stria or sulcus in front of it; pores minute, situated above the middle of the side behind, but in a distinct fold of the sulcus; sterna striate. *Scobina* absent.

Anal somite small; tergite somewhat acutely angled, covering but not surpassing the valves; the valves lightly compressed posteriorly but not marginate; sternite triangular.

Legs longish, those at the anterior end of the body with the basal two segments carinate and compressed.

Number of segments 44.

Length about 50 mm., width 5.5 mm.

Locality. St. Lucia (*G. A. Ramage*).

A single female example.

In the absence of the scobina this species resembles *R. Gossei* and *R. politus*; it may be recognized from both, however, by its acutely-angled anal tergite and complete transverse sulcus.

RHINOCRICUS MANDEVILLEI, sp. n.

Colour dark brown or nearly black, with the area of the segments behind the transverse sulcus widely and completely flavous; head flavous, lightly infuscate; antennæ and legs flavous; valves ochraceous; anal tergite fuscous.

Head smooth; pores 2+2; antennæ short; eyes very widely separated; collum laterally rounded.

Segments with complete and strong transverse sulcus; the area behind it slightly elevated, almost entirely smooth; strongly striate below; no stria in front of the sulcus. *Scobina* absent. *Pores* conspicuous, just in front of the sulcus, but in a loop of it. *Sterna* striate. *Anal tergite* obtusely angled behind, not surpassing the valves; valves convex and not compressed; sternite triangular.

Legs short, with one seta beneath the segments.

Number of segments 40-42.

Length up to 33 mm., width 4 mm.

Locality. Mandeville, Jamaica, 1950 feet alt. (*T. D. Cockerell*).

Of the species enumerated in this paper, *R. mandevillei* is allied to *R. Ramagei* in being without the scobina and without a stria in front of the complete transverse sulcus. The two forms, however, differ strongly in colouring, and in *R. Ramagei* the anal tergite is acutely angled behind.

RHINOCRICUS GOSSEI, sp. n. (Pl. XXXVIII. fig. 2.)

Colour (dry example) mostly pale greenish yellow, the area of the tergites behind the sulcus ferruginous (probably olivaceous or nearly black and banded with red when fresh); antennæ and legs pale, but showing signs of infuscation.

Head smooth, polished, the sulcus weak; labral pores 2+2. *Antennæ* very short, shorter than the face and not extending to the hinder border of the collum. *Eyes* consisting of about 33 ocelli arranged in about 6 transverse series, the ocelli not contiguous; distance between the eyes greater than four diameters.

Collum smooth above, evenly rounded at the sides, with a faint marginal sulcus, not extending so low as the second tergite; second tergite flat beneath. The rest of the tergites smooth above and at the sides, the longitudinal sulci extending only a very short distance up the side; the transverse sulcus complete or obsolete above; the pores situated just in front of it. *Scobina* apparently absent*.

Anal somite short; the tergite produced into a rounded angular process which covers but does not project beyond the valves; margin of valves compressed or scarcely at all compressed; sternite triangular, the apex more or less rounded.

* At least, it is not present upon the 11th and 18th segments.

Legs short, with a single seta below each segment.

Number of somites 44-47.

Length 55-60 mm.

♂ more slender than ♀, the anterior coxæ not or scarcely produced.

Locality. Jamaica (*P. H. Gosse*).

This species is very closely allied to *R. politus* of Porath, but seems to differ at least in having the collum scarcely margined. In *politus* this plate is described as thickly and deeply marginate.

**RHINOCRICUS EXCISUS*, *Karsch, op. cit.* p. 73.

Colour black, concolorous.

Robust.

Head marked with transverse striæ; labral border so deeply excavated that the excision extends as far as the insertion of the antennæ. Pores 2+2. *Antennæ* not surpassing the collum.

Collum widely rounded, without marginal sulcus.

Segments not visibly sulcate, smooth, sulcate or striate beneath. *Scobina* extending to the 26th or 27th rings. *Pores* large, above the middle of the side, in front of the transverse sulcus and marked by a longitudinal sulcus.

Anal tergite with its angle rounded, not surpassing the valves, which have their margins widely compressed.

Number of segments 53.

Length up to 140 mm.

Locality. Jamaica.

**RHINOCRICUS PARCUS*, *Karsch, op. cit.* p. 68.

Colour fusco-testaceous; antennæ and legs red.

Body tolerably thick.

Head smooth, its sulcus interrupted; pores 2+2; antennæ not surpassing the collum.

Collum laterally rounded. The segments not visibly sulcate, smooth, the anterior part adorned beneath with abbreviated transverse striæ; dorsum smooth. *Scobina* on segments 8-12, the posterior margin of segments 7-11 deeply excised; the median and posterior part of the posterior segments more or less evidently canaliculate; pores large, scarcely above the middle of the side, in front of the sulcus.

Anal tergite with its posterior angle rounded, not touching the margin of the valves; valves convex, compressed, not marginate.

Number of segments 43.

Length: ♂, 115 mm.; ♀, 80 mm.

Locality. Porto Rico.

RHINOCRICUS HOLOMELANUS, sp. n.

? *Spirobolus excisus*, *Karsch, Zeits. Naturwiss.* (3) vi. p. 73.

Colour black, shining; antennæ and legs of the same colour.

Face mesially impressed, striolate, frontal sulcus deep; labral sulcus shallow; labrum with 2+2 pores, normally emarginate. *Antennæ* not surpassing the collum. *Eyes* very indistinct, separated by a space equal to about three diameters.

Collum laterally rounded, without marginal sulcus. The rest of the segments smooth, at most lightly wrinkled longitudinally, striate only inferiorly; the transverse sulcus very feeble, almost obsolete both laterally and above. *Sterna* transversely striate. *Scobina* very deep and large, extending to the 24th or 25th segment, the posterior border of more or fewer of the anterior scobinate segments lightly bi-emarginate. *Pores* very conspicuous, far above the middle of the side, just in front of the transverse sulcus, the first below the level of the rest. *Anal tergite* bluntly angled behind, not surpassing the valves; valves with lightly compressed margins; sternite large, posteriorly rounded.

Legs short, the segments furnished beneath with a single seta.

Number of segments 51.

Length up to 105 mm.

Locality. Jamaica.

Of this species I have seen three female examples, one adult and one young received from Mr. T. D. A. Cockerell, who obtained them at Moneague and Mandeville, and one dried example presented by Mr. P. H. Gosse.

In the young specimen the emargination of the tergite is more pronounced than in the adult, and the legs are ferruginous. The specimen sent by Mr. P. H. Gosse is, owing to its method of preservation, of a ferruginous colour.

Judging by Dr. Karsch's description of *R. excisus*, the latter is very nearly related to this new form. There are, however, noticeably two points in which it differs, namely, in having the labrum very deeply emarginate and the posterior border of the segments not bisinuate. The last, however, is a variable character and is only doubtfully valuable for distinguishing species.

RHINOCRICUS MACROPUS, sp. n. (Pl. XXXVIII. figs. 3-3 d.)

♀. *Colour* almost black, or a deep brownish black, tinted with olive-green; legs green or piceous, with the tarsal segment ferruginous.

Head smooth, obsoletely transversely striolate or wrinkled; the sulcus interrupted in several places; two labral pores on each side. *Antennæ* reaching the hinder border of the collum, about as long as the face. *Eyes* separated by a space that is about equal to two diameters, composed of about 33 ocelli arranged in about six transverse rows. *Collum* smooth, evenly rounded laterally, and not extending so low as the second tergite, with a marginal sulcus. Second tergite flat beneath, with the rest of the somites smooth above, the posterior half polished and elevated. The transverse sulcus has the form of a shallow groove. The *pores* minute, situated just in front of the sulcus. The *striae* extending up to the pore, and, in the anterior segments, from the pore a transverse stria extends over the dorsum in front of the transverse sulcus. *Scobina* present but very small, extending to about the 35th segment. *Sterna* transversely striolate. *Anal somite* small, the tergite produced into a wide, long, angular caudal process, which far surpasses the valves. *Valves* with margins lightly compressed. *Sternite* triangular. *Legs* very long and slender, with a single seta on the lower edge of each segment.

♂. A little slenderer than the female. The anterior legs swollen and padded beneath, the coxæ produced and the trochanter bearing a distinct tubercle at its distal end. The gnathochilarium with a conspicuous tubercle on each side near its free edge.

Copulatory feet as in fig. 3 d.

Number of segments 50-51.

♀. Length about 93 mm., width 8.8 mm.

♂. " " 88 mm., " 8.0 mm.

Locality. St. Vincent (*H. H. Smith*). " Pretty common in the mountain forest, up to 2000-3000 ft."

RHINOCRICUS ARBOREUS, *Sauss. Linn. Ent.* xiii. p. 331 (1859); *Mém. Mex., Myriop.* p. 98, pl. iv. fig. 28. (Pl. XXXVIII. fig. 4.)

This species is very closely related to the preceding in the length of its legs, small scobina, long wide tail, size, colouring, &c. It may be recognized, however, by the form of its copulatory

feet. Moreover, the posterior portion of the tergite is not elevated and the transverse sulcus is continued over the dorsum as a distinct stria. In the male the anterior legs are much less swollen than in *R. macropus*.

Number of segments up to 54.

Length up to 94 mm. (78 according to de Saussure).

Locality. St. Thomas (*M. Sallé coll.*); Santa Cruz (*A. Newton*); Antigua.

Dr. Karsch (*Zeits. Naturwiss.* (3) vi. pp. 8-9) has recorded this species from Porto Rico. He characterizes two varieties of it in the following terms:—Var. *Krugii*. "Black with reddish border to the rings and reddish legs: western part of island." Var. *Gundlachi*. "Greyish form, with dorsal red spot on the rings and orange-coloured tarsi: centre of island and ? east coast."

The colour of the typical form, of which the Museum has a great number of alcohol-examples from St. Thomas, is usually a greyish greenish black, the posterior third of the rings being much darker and bordered with reddish; the legs are greyish green and concolorous. The specimens from Santa Cruz and Antigua resemble those from St. Thomas.

Some authors have suggested that this species is identical with *Rh. caudatus* of Newport. There is, however, but little resemblance between the two.

*RHINOCRICUS HAITENSIS (*Gervais*), *Ins. Aptères*, iv. pp. 191-192; *Voyage de Castelnau, Myriapodes*, p. 23, pl. iii. fig. 1 (1859).

Colour black, including the head and antennæ.

Eyes arranged in a suborbicular patch, consisting of six rows of ocelli. Labral punctures 2+2; the median cephalic sulcus feebly indicated. The first tergite triangular, rounded at apex, with a feeble marginal sulcus.

The inferior striæ on the rest of the segments very feebly developed; a few transverse striæ on the anterior part.

Anal tergite triangular, not spined, transversely impressed; not reaching the border of the valves; anal sternite triangularly rounded.

Number of segments 54.

Length 163 mm., width 13 mm.

Locality. St. Domingo (Haiti).

This species is known to me only from the figure and description published by Gervais.

*RHINOCRICUS DOMINGENSIS (*Sauss.*).

Spirobolus haitensis, *Sauss. Mém. Mex., Myriap.* p. 105 (nec *haitensis*, Gerv.).

Colour blackish; testaceous when dry, with the posterior border of the segments reddish or fulvous.

Body cylindrical throughout, compressed posteriorly. Labral pores 2+2. *Eyes* forming a subtriangular plate disposed in five and seven rows.

Antennæ long, reaching the third somite. The first segment laterally rounded, with a feeble marginal sulcus. The second segment with its inferior angles not produced. All the segments very smooth, feebly striate below; the transverse sulcus very feeble, almost absent. *Pores* just above the middle of the side of the body.

Anal tergite angular, overlapped by the valves, both finely sculptured; *sternite* rounded.

♂. Legs 3-7 with their coxæ swollen.

The anterior lamina of the copulatory feet triangular, with rounded apex.

Number of segments 47.

Length 90 mm., width 9 mm.

Locality. St. Domingo (Haiti).

RHINOCRICUS MALTZANI, sp. n. (Pl. XXXVIII. figs. 5-5 b.)

Allied to the preceding.

Colour (in alcohol) a deep olive-green, sometimes nearly black, the posterior border of the tergites flavous or ferruginous, the pale band widening laterally and inferiorly. *Antennæ* and legs ferruginous or flavous, rarely piceous, as also are the edges of the valves and the margin of the labrum.

Head smooth, obsoletely striolate transversely; the sulcus obsolete mesially. Labral pores 2+2. *Antennæ* shorter than the face, not reaching the second tergite. *Eyes* separated by a space equal to more than three diameters. *First tergite* evenly rounded laterally, with a marginal sulcus, not extending inferiorly so low as the second. The second somite not excavated beneath. The rest of the somites almost without sculpture, striate immediately above the legs. The transverse sulcus not deep, nearly obsolete above; the area behind it polished, that in front of it dull. The *pores* situated high on the side, just in front of and touching the sulcus. *Scobina* small, extending to

about the 22nd somite. Anal somite moderate in size; the tergite transversely impressed above, not surpassing the valves; the valves with their margins a little or scarcely compressed; sternite triangular. Legs short, with a single seta on the lower edge of each segment.

♂. Anterior legs thickened; coxæ enlarged, especially those of the sixth pair.

Copulatory feet as in fig. 5 a.

Number of segments 50-52.

Length up to about 75 mm., width 7.8 mm.

Locality. Cape Haiti in St. Domingo.

This species appears to differ from the preceding two, which inhabit the same island.

R. domingensis differs from it in having longer antennæ and a differently formed copulatory apparatus; while *R. haitensis*, in addition to being much larger and differently coloured, seems to have the lateral border of the collum much narrower and more angular.

*RHINOCRICUS DUVERNOYI, *Karsch, op. cit.* p. 77.

Colour brown, shining.

Head smooth; sulcus almost complete; labral pores 2+2. *Collum* laterally rounded, nearly attaining the edge of the 2nd segment, not noticeably sulcate.

Segments with complete sulcus, smooth, posteriorly subcanaliculate longitudinally; inferiorly striate. *Scobina* extending from the 8th to the 20th. *Pores* large, in front of the sulcus, the first much deeper than the others. *Anal tergite* submucronate, the base of the angle transversely grooved, not surpassing the valves, which are compressed and have thickened sulcate margins.

Number of segments 50.

Length 135 mm.

Locality. Cuba.

RHINOCRICUS SOLITARIUS, sp. n. (Pl. XXXVIII. fig. 6.)

♂. *Colour* (in alcohol) black, with red anal valves, red posterior borders to the somites, and yellow legs.

Head smooth, finely striate transversely, the median sulcus interrupted; labral pores 2+2. *Eyes* separated by a space equal to at least three diameters, consisting of about 30 ocelli arranged in six transverse series; *antennæ* very short, about

half the length of the head, and not extending beyond the collum.

First tergite nearly smooth, at most very finely punctulate; very widely rounded laterally, with a conspicuous marginal sulcus. *Second tergite* flat below or even a little excavated. The rest of the somites very finely transversely striolate in front; the inferior part above the legs longitudinally striolate, the striæ in front of the transverse sulcus being directed obliquely upwards; the transverse sulcus visible inferiorly, becoming obsolete above and losing itself in a shallow transverse depression, which separates the anterior dorsal part from the posterior dorsal part of the somite; the dorsal part finely punctulate or minutely striolate. *Sterna* transversely striate. *Scobina* extending to about the 23rd somite. *Pores* conspicuous, situated above the middle of the side in a line with the sulci, the sulci, however, curve round them posteriorly; there is, moreover, a faintly marked stria running from the pore backwards to the hinder border of the somite. *Anal somite* small; tergite obtusely and roundly angled, not projecting beyond the summit of the valves; valves lightly compressed, with margins simple; sternite more than twice as wide as long, with convex posterior border.

Legs short and thick, with a single seta below each segment; those at the anterior end of the body thickened, with the coxæ slightly produced.

The anterior median lamina of the copulatory feet flat, narrowed inferiorly, with lightly sinuate sides, the apex widely rounded, the anterior lateral laminae not extending inferiorly so low as the median, but surpassed by the posterior lateral.

Number of segments 44.

Length about 32 mm.

Locality. Jamaica (*T. D. A. Cockerell*).

**RHINOCERICUS GRACILIPES*, *Karsch, op. cit.* p. 71.

Colour blackish.

Body slender.

Head without sulcus, slightly roughened with oblique striæ; labral pores 2+2. *Antennæ* long, reaching the fourth ring.

Collum irregularly rugose, widely rounded laterally. Segments deeply segmentate; scobina extending to about the 29th segment; the posterior part of the segments irregularly longitudinally

subcostate, striate beneath; the anterior part smooth above, striolate below.

Pores small, nearly in the middle, in front of the transverse sulcus and at the anterior extremity of a longitudinal sulcus.

Anal tergite produced into a depressed caudal process, which surpasses the valves a little; valves with widely compressed margins.

Legs very long.

Number of segments 40-42.

Length 60 mm.

Locality. Cuba.

RHINOCRICUS GRENADENSIS, sp. n. (Pl. XXXVIII. fig. 11.)

Colour somewhat variable; the body usually nearly a uniform fuscous anteriorly, but generally richly mottled with black and yellow posteriorly, rarely almost entirely concolorous, with the posterior part of the segments paler than the anterior; the collum entirely bordered with a paler band, anal segment and sulcus black; face infuscate, with a darker patch in the middle; legs and antennæ flavous.

Head, as usual, smooth or nearly so, pores 2+2; antennæ short; eyes with indistinctly defined ocelli, widely separated. *Collum* evenly rounded laterally, with a faint marginal sulcus. The rest of the segments shining, nearly smooth, minutely striolate. The transverse sulcus very strong below, and continued over the dorsum as a distinct depression; the area behind it longitudinally sulcate below, that in front of it obliquely striate below, but none of these striæ are continued above the level of the pore, so that there is no secondary transverse dorsal sulcus. *Scobina* present and extending to about the 27th segment.

Sterna striate. *Pores* above the middle of the side, just in front of the sulcus; their position marked by a faint longitudinal sulcus upon the posterior portion of the segment.

Anal tergite just surpassing the valves, the caudal process bluntly rounded and basally impressed; the valves lightly compressed, but the margins not sulcate; sternite triangular.

Legs of moderate size, with a single seta on the lower edge of each segment.

♂. More slender than the female, antennæ extending beyond the second segment, the legs rather longer. Some of the

anterior legs thickened, and with their basal segments inferiorly subcarinate. The anterior lamina of the copulatory foot evenly cordate.

Number of segments about 40-42.

♀. Length up to 36 mm., width 4 mm.

♂. " " 31 mm., " 3 mm.

Locality. Grenada (*H. H. Smith*).

RHINOCRICUS MONILICORNIS (*Porath*).

Spirobolus monilicornis, *Porath, Bih. Sv. Vet.-Akad. Handl.* iv. no. 7, p. 31 (1876).

Spirobolus Heilprini, *Bollman, P. Ac. Philad.* 1889, p. 127.

? *Spirobolus virescens*, *Daday, Term. fusetek*, xiv. p. 140, pl. vii. figs. 8-10.

Colour greenish black, with the hinder border of the segments widely flavous or ferruginous; collum entirely bordered with same pale colour; antennæ, feet, and caudal process also flavous or ferruginous.

Body tolerably slender.

Head with nearly complete sulcus; pores 2+2. Antennæ short, scarcely reaching the border of the collum. Eyes distinct, suborbicular, separated by a space greater than two diameters.

Collum laterally widely rounded, lightly marginate.

Second segment not excavated beneath. The rest of the segments transversely bisulcate above; the ordinary sulcus complete, and in front of it a second sulcus, which takes its origin on a level with the pores. The anterior part of the segments strigose, the posterior part striolate below, the striolæ becoming shorter towards the dorsum.

The pores small, situated just behind, but in a loop of the sulcus; sterna transversely striate.

Scobina present.

Anal tergite produced into an acutely angled process, which projects beyond the summit of the anal valves; valves compressed, not marginate; sternite angled.

Legs short.

♂. Coxa of the 3rd, 4th, and 5th legs produced into a conspicuous triangular process.

Copulatory feet almost exactly as in the following species.

Number of segments 44-45 in male, 48 in female.

Length up to about 45 mm.

Locality. Barbadoes (*H. W. Feilden*); Cape Hayti.

I can find no valid reason for separating *R. monilicornis* from *R. Heilprini*.

The species seems to be tolerably widely spread. *R. monilicornis* was recorded from Brazil and *R. Heilprini* from Bermuda. In addition to the specimens already mentioned from Barbadoes, the British Museum has others, all apparently co-specific, from Georgetown, Demerara (*J. J. Quelch*), and Bermuda ('*Challenger*').

RHINOCRICUS CONSOCIATUS, sp. n. (Pl. XXXVIII. fig. 7.)

Closely allied to the preceding.

Colour much darker; segments black, with the hinder border only flavous or ferruginous, and only about the posterior third of the anal tergite pale coloured; antennæ and legs lurid. The transverse sulcus complete dorsally on all the segments, except the first and last; the second sulcus always clearly defined in front of it, so that each segment is evidently transversely bisulcate dorsally.

In the male the coxæ of the 3rd-5th legs are much less noticeably enlarged than in *R. monilicornis*, and the legs of the rest of the body are considerably larger—*i. e.* they are about as long as the face.

Number of segments 44.

Length up to 35 mm., width 3 mm.

Locality. Union Island.

RHINOCRICUS LEUCOSTIGMA, sp. n. (Pl. XXXVIII. fig. 8.)

Spirobolus paraensis, *Pocock, Ann. Mag. Nat. Hist.* (6) ii. p. 479 (*not paraensis of Humb. & Sauss.*).

Allied to *R. monilicornis*.

Colour black; a flavous spot marking each pore and a large fulvous spot upon the middle of the dorsal surface on the anterior half of the segments; legs and antennæ flavous or fulvous; anal valves posteriorly ferruginous; sterna fulvous.

Head transversely striolate; pores 2+2. *Eyes* large, orbicular, separated by a space about equal to three diameters. *Antennæ* just surpassing the collum.

Collum evenly rounded laterally, with a marginal sulcus; the rest of the segments smooth above; the vertex crossed by two sulci as in *monilicornis*, but the anterior sulcus rises some distance below the pore; the area in front of the main sulcus obliquely

striolate at the sides and below, the area behind longitudinally striate below; the scobina small, but extending at least to the 20th segment; sterna striate.

Pores situated in front of the sulcus, but in a fold of it.

Anal tergite produced into an acutely angular, blunt process, which just surpasses the valves; valves with margins strongly compressed; *sternite* triangular.

Legs short, with a single seta below each segment.

♂. Thinner than the female and with longer legs; the coxæ of the anterior legs slightly produced.

Number of segments about 44.

Length of male and female about 50 mm., width of male 4, of female 4·3 mm.

Locality. Dominica (*G. A. Ramage*).

RHINOCRICUS GRAMMOSTICTUS, sp. n.

Colour very much as in *R. serpentinus*, but more pronounced, the median dorsal dark band and the two dorsal flavous bands being more clearly defined. The *segments* nearly smooth, minutely punctulate, with scarcely a trace of the transverse sulcus, the posterior portion weakly striate longitudinally below, the anterior portion adorned with obliquely set short striolæ about up to the pore; the pore minute, isolated, the sulcus obliterated near it, with a transverse striola crossing the dorsum in front of the position of the pore, this stria becoming fainter towards the hinder extremity of the body. *Sterna* striate. *Scobina* present. The posterior segments obsoletely wrinkled longitudinally. *Anal somite* small, the tergite produced into an acute process, which projects beyond the summit of the valves; valves slightly compressed, not marginate.

Legs short, the basal segments of the anterior ones compressed and carinate.

Number of segments 40-43.

Length up to 45 mm., width 4·5 mm.

Locality. St. Lucia (*G. A. Ramage*).

Although resembling *R. serpentinus* very closely in colouring, this species may be recognized by its more robust build, fewer segments, longer tail, &c.

RHINOCRICUS SERPENTINUS, sp. n. (Pl. XXXVIII. fig. 9.)

Colour variable, slate-grey above, with a yellow spot on each

side of the middle line, which is deep black; the dark colour of the dorsal surface generally fading into flavous at the sides; legs bright flavous; antennæ fusco-annulate.

Head smooth, pores 2+2, sulcus mesially interrupted; *eyes* orbicular, separated by about four diameters; *antennæ* short, scarcely surpassing the collum.

Collum laterally rounded, with a weak marginal sulcus; the rest of the segments smooth behind, the transverse sulcus obsolete or nearly so dorsally; a transverse sulcus in front of it, rising on a level with the pores, as in *R. monilicornis*, but weaker, and sometimes incomplete mesially; the area in front of this secondary sulcus adorned with many shorter fine transverse or oblique sulci, which below are continuous with the longitudinal sulci of the posterior portion of the segments. *Pores* small, situated in front of the position of the normal sulcus.

Sterna striate. *Scobina* extending at least to the 30th segment.

Anal somite compressed; tergite produced into an angular process which does not surpass the valves. *Sternite* triangular; valves lightly but widely depressed.

Legs as in *R. monilicornis*.

Number of segments 48-52.

♀. Length up to 62 mm., width 5.0 mm.

♂. " " 60 mm., " 4.5 mm.

Locality. St. Lucia (Fond de Jacques).

Collected by G. A. Ramage.

RHINOCRICUS ANGUINUS, sp. n.

Closely allied to *R. serpentinus*.

Colour almost exactly as in *R. monilicornis*, the segments being piceo-olivaceous and posteriorly widely bordered with pale olivaceous, the anal tergite, however, is only narrowly bordered with flavous, while the valves are more widely flavous posteriorly. On the segments, the transverse sulcus is almost entirely obsolete dorsally and not deep as in *R. monilicornis*; the sulcus in front of it, however, is distinct, and rises from the level of the pore; the area in front of the sulci is adorned with transversely or obliquely set short striolæ above and at the sides.

The *anal somite* is small; the tergite acutely angled, but scarcely covering, and certainly not surpassing the valves.

Sexual characters as in *R. monilicornis*.

Number of segments 50.

Length 51 mm.

Locality. A single male from St. Lucia (*G. A. Ramage*).

Differs from *R. monilicornis* in that the sulcus of the segments is incomplete dorsally, &c. In this respect it apparently resembles *R. flavo-cingulatus* of Karsch from Caraccas, but the two may certainly be distinguished by the shortness of the caudal process in this species.

RHINOCRICUS LEPTOPUS, sp. n.

Closely allied to *R. serpentinus*.

Colour entirely black. *Legs* fusco-ochraceous.

Body long and slender.

The transverse sulcus complete, except on the posterior segments, where it disappears; the posterior part of the segments longitudinally striate inferiorly, the anterior part obliquely and transversely striolate, a conspicuous stria rising about on a level with the pore, crossing the vertex from side to side.

Scobina present. *Anal segment* as in *R. serpentinus*.

Legs much longer than in *R. serpentinus*.

Number of segments 49.

Length 53 mm., width 4.5 mm.

Locality. St. Lucia (*G. A. Ramage*).

A single female example.

RHINOCRICUS VINCENTII, sp. n. (Pl. XXXVIII. fig. 10.)

♀. Short and robust.

Colour (in alcohol) black, the posterior border of the tergites obscurely ferruginous; antennæ, legs, and labral border reddish yellow.

Head smooth, the sulcus deep below and above, obsolete in the middle; labral punctures 2+2. *Antennæ* shorter than the face. *Eyes* separated by a space that is equal to more than three diameters, composed of about six transverse rows of ocelli. The *first tergite* smooth, evenly rounded laterally, with an anterior marginal sulcus, not reaching so low as the second. The second somite flat beneath. The rest of the segments shining but punctulate and striolate; the transverse sulcus well marked at the sides and punctured, fading away dorsally, where its place is taken by a secondary sulcus which rises on each side just above and in front of the pore; the inferior portions of the segments longitudinally sulcate both behind and in front of the sulcus.

Pore just in front of the sulcus. *Scobina* extending to about the 34th segment; the posterior borders of the segments above the scobina sometimes very conspicuously bisinuate, sometimes scarcely visibly so. *Anal tergite* not surpassing the valves, the process rounded and nearly rectangular. *Valves* lightly compressed but not sulcate marginally. *Sternite* triangularly rounded.

Legs shortish, with a single seta beneath each segment.

♂. Copulatory feet as in fig. 10.

Number of segments about 40.

♀. Length about 45 mm., width 5 mm.

♂. " " 38 mm., " 4 mm.

Locality. St. Vincent (*H. H. Smith*).

RHINOCRICUS SABULOSUS, sp. n. (Pl. XXXVIII. fig. 12.)

Colour (in alcohol) yellowish red, with three very distinct black longitudinal bands, one in the dorsal middle line and one on each side on a level with the pores; head infusate; first tergite and anal tergite also infusate; antennæ and legs entirely pale.

Head, eyes, antennæ, and collum constructed as in the other species of this group.

The rest of the *tergites* very finely punctulate; the posterior part a little higher than the anterior; the anterior part obliquely striate below, the posterior longitudinally. The true transverse sulcus incomplete dorsally on all the segments, extending only slightly above the pore, but the secondary sulcus, which rises below the level of the pore and is nothing but one of the oblique striæ above referred to, crosses the vertex of the dorsum except upon a few segments at the anterior and posterior end of the body. *Scobina* present, extending to about the 20th segment. *Pores* rather small, situated just in front of a loop of the transverse sulcus. *Sterna* striolate.

Anal somite small; tergite obtusely angled posteriorly, not surpassing the valves; *valves* with margins not compressed.

Copulatory foot of male as in fig. 12.

Number of segments 35 ♀, 37 ♂.

Length of ♀ 22 mm., ♂ 17 mm.

Locality. Mandeville, Jamaica, 1950 ft. alt. (*T. D. A. Cockerell*).

I have seen two examples of this species; both of them, how-

ever, appear to be slightly immature, inasmuch as the three posterior segments are apodous.

The colouring of this species furnishes a very well-marked characteristic of it. In having a median dorsal black band it approaches *R. grammostictus* and *R. serpentinus*; from both, however, it differs in size and in having the flavous spot on each side of the dorsal middle line much larger and the lateral black band very strongly marked. Moreover, a further difference from *serpentinus* is the smaller number of its segments, and from *grammostictus* the absence of a tail.

RHINOCRICUS COCKERELLI, sp. n.

Colour: posterior portion of each segment widely flavous behind the transverse sulcus, this band is, however, very faintly fuscous in the dorsal middle line; the anterior portion of the segments is black above, ferruginous or lurid as high as the pore; head with a median T-shaped fuscous fascia as in *R. sabulosus*; anal tergite entirely ferruginous; valves flavous; antennæ and legs flavous.

Allied to *R. sabulosus* in nearly all respects; the transverse sulcus is incomplete dorsally on all the segments, and the supernumerary sulcus is only complete in the anterior half of the body; the posterior portion elevated. *Anal tergite* posteriorly very obtusely angled, not surpassing the valves; *valves* not compressed; *sternite* rounded.

Legs moderately long.

Number of segments 45.

Length 34 mm., width 3.5 mm.

Locality. Mandeville, Jamaica, 1950 ft. alt. (*T. D. Cockerell*).

Differs from the preceding principally in colour and number of segments. Perhaps of the extra-Jamaican species it comes nearest to *R. anguinus* from St. Lucia; but it certainly differs in colouring and in having the anal tergite obtusely and not acutely angled.

RHINOCRICUS TOWNSENDI, sp. n.

Colour entirely black, except for a fine pale border on the segments.

Collum without marginal sulcus. *Segments* without trace of a transverse sulcus above, the entire area being perfectly plane and unornamented from the anterior to the posterior border. The sulcus visible inferiorly and extending as far as about halfway up

to the pores, which are very conspicuous. *Scobina* absent. Inferior-lateral portions of segments striate, as also are the sterna. *Anal segment* small, the tergite not surpassing the valves, the borders of which are scarcely compressed; *sternite* triangular.

Number of segments 39-40. Length up to about 26 mm.

Locality. Jamaica (*T. Townsend*). Described since preparation of Synopsis, p. 486.

THYROPROCTUS, gen. nov.

Like *Rhinocricus* in the laterally rounded form of the collum, presence of scobina, number of labral pores, structure of copulatory apparatus, &c., but differing in the peculiar construction of the anal segment; the posterior border of the tergum is transverse and without any caudal process; the valves, which have no thickened edge, lie, when closed, almost at right angles with the long axis of the body, and the sternite is very large, thickened, and transversely elongate.

THYROPROCTUS TOWNSENDI, sp. n. (Pl. XXXVII. figs. 6-6 c.)

Colour black.

Head striolate above, with scarcely a trace of a median sulcus. *Antennæ* of moderate length. *Collum* smooth above, with lateral marginal sulcus; the rest of the segments (*i. e.* from the second to those quite at the end of the body) furnished with an abnormal transverse groove, which rises low on the sides from the normal groove and crosses the dorsum in front of the normal groove, which is much fainter than the other. The *pores* high on the side, close to the normal transverse groove, with a short groove just behind them. The area behind the normal transverse sulcus elevated. *Scobina* present in the anterior half of the body, but weak. *Sterna* striate.

Legs with a single seta below each segment.

Number of segments about 40.

Length about 40 mm.

Locality. Jamaica (*T. Townsend*).

**IULUS INDUS*, *Pal. Beauvois*.

Iulus indus, *Pal. Beauvois, Ins. d'Afr. et d'Amér.* p. 154, pl. 6. fig. 2.

Locality. St. Domingo.

Judging by the figure, I believe the species identified by Palisot de Beauvois as *Iulus indus* to be a *Spirostreptus*.

This species and the following are of doubtful generic position.

**IULUS BEAUVOISII*, *Gervais*.

Iulus indus, *Palisot de Beauvois*, *Ins. d'Afrique et d'Amérique*, p. 154, pl. 6. fig. 2.

Iulus Beauvoisii, *Gervais*, *Ann. Sci. Nat.* (2) vii. p. 47; *id. Ins. Apt.* iv. p. 191.

Colour for the most part blackish chestnut; head, antennæ, and legs ferruginous.

Head smooth above, finely rugose below, with three or four obsolete punctulations above the labral excision. *Antennæ* of moderate length, the segments contracted at the base, the second the longest. The lateral portions of the collum obliquely truncate, marked with two oblique sulci, the second of which is interrupted inferiorly; the anterior angle more prominent than the posterior, which is obtuse.

The upper surface of the body smooth, only very finely rugulose; the exterior part of the segments transversely striate; the posterior part marked below with feeble longitudinal striæ. *Anal tergite* not spined, transversely impressed; *sternite* triangular.

Number of segments 60.

Length 70 mm., width 5 mm.

Locality. Martinique.

It is very difficult to know what to do with this species. *Gervais* proposed the name *Beauvoisii* as a substitute for *indus* of *Beauvois*; but it is almost certain to my mind that the specimen he described as *Beauvoisii* from Martinique is not co-specific with *Beauvois*'s specimen of *indus* from San Domingo. Consequently unless it has been renamed since 1847, it is nameless. Moreover, *Gervais* asserts that it is referable to *Spirobolus*. But in spite of the fact that he appears in other cases to have been well acquainted with the differences between this genus and *Spirostreptus*, I venture to think he fell into error in this instance. His description, especially where he mentions the collum and labral pores, seems to apply to a *Spirostreptus* very nearly related to the form I have named *antillanus*.

In a list of the described *Iulidæ* of N. America—an area which is provisionally expanded to include Central America and the W. Indies—recently compiled by Mr. *Bollman**, the following species are said to be West-Indian:—*Spirostreptus confragosus*, *flavicornis*, *Karsch*, and *surinamensis*, *Brandt*; *Spirobolus acutus*, *crassicornis*, *Humb. & Sauss.*, and *flavocinctus*, *fundipudens*,

* *Ann. New York Ac. Sci.* iv. pp. 44-45 (1887).

miniatus, Karsch. Moreover, it seems probable that *Spirobolus caudatus* of Newport and *Iulus (Paraiulus) rasilis* of Karsch are intended to be included, the letter "N" with which they are marked being, I suppose, a misprint for "W," which was Bollman's symbol for "W. Indian." I presume that Mr. Bollman saw specimens of *Iulidæ* ticketed "W. Indies," which he referred to the above species. But since I am not prepared to accept, without further information, either the localities or the identification of the specimens, I have thought it superfluous to include in this report further references to these species or notes upon their characters and affinities.

Suborder POLYDESMOIDEA.

Family POLYDESMIDÆ.

The genera of the family here recognized may be distinguished as follows:—

- a.* The third segment like the second segment of a *Glomeris*, with its lateral portion enlarged, very much larger than lateral portion of the second and of the segments that follow it; all the keels vertical [Sauss. CYCLODESMUS, Humb. &
- b.* The third segment not larger than the rest and resembling them in structure; the keels not vertical.
- a*¹. Pores invisible; keels depressed, the head concealed beneath an expansion of the first segment. CRYPTODESMUS, Pet.
- b*¹. Pores visible on their appropriate segments; the head not concealed.
- a*². Pores dorsal, situated in the centre of a perfectly circular smooth plate; caudal process wide, squared PLATYRHACHUS, Koch.
- b*². The pores lateral, not surrounded by a smooth circular area; caudal process triangular, posteriorly narrowed with truncate apex.
- a*³. Keels of the 2nd segment rising below the level of those of the 1st and 3rd segments STRONGYLOSOMA *, Br.

* Syn. *Paradesmus*, Sauss.

- ♂³. Keels of the 2nd segment on the same level as those of the 1st and 3rd. [nom. nov. †
 3rd. ODONTOPELTIS,

CYCLODESMUS PORCELLANUS, sp. n. (Pl. XXXIX. figs. 1, 1 a.)

♀. Colour entirely white, like porcelain.

Body smooth.

Head with deep frontal sulcus. First tergite with its anterior border lightly emarginate, elevated, its inferior (anterior) angles less than right angles, the superior angles obtusely rounded; the 2nd segment arched as in *C. aztecus*; the 3rd segment very large, the anterior border of the lateral portion widely convex, the posterior border deeply concave; the 4th segment laterally about half the width of the 3rd. The rest of the segments as in *C. aztecus*, but with the posterior border of the keels of those in the posterior half of the body with a deep and conspicuous notch.

Length 9 mm.

Locality. Jamaica.

This species may be at once distinguished from the Mexican *C. aztecus*, the only other form of the genus, by the notch on the posterior border of its keels. In *aztecus* this border is entire.

*CRYPTODESMUS LAQUEATUS, *Karsch, Mitth. Münch. ent. Ver.* 1880, p. 142.

Locality. Cuba.

"Pallidus vel infuscatus, unicolor, dorso subconvexo, segmentis dense sed plane granulosis, segmento primo subglabro, antice rotundato, plano, radiis imperfectis impressis supra ornato, postice convexo, ruguloso, antennis fuscis, pedibus pallidis. Long. corp. 10-12 mm."

*CRYPTODESMUS ORNAMENTATUS, *Karsch, loc. cit.* p. 142.

Locality. Cuba.

"Fuscus, dorso alte convexo, carinis lateralibus planis, segmentis supra granulis subacutis, in series quatuor longitudinales dispositis interstitiisque granulis minoribus sparsis armatis, alis postice et extus sublobatis, segmento primo margine antico lobato antice plano, dorso alte convexo, granulis crassis subacutis inordinatis vestito. Long. corp. ca. 6 mm."

These two descriptions speak for themselves. They are practically valueless for the identification of the species.

† For *Rhacophorus*, C. Koch (1847), preoccupied in 1827 for a frog.

CRYPTODESMUS VINCENTII, sp. n. (Pl. XXXIX. figs. 2-2 *d.*)

Colour black, the borders of the segments pale, from which short pale bands run inwards towards the middle of the plate. Pale beneath.

Head punctured, shortly hairy, but smooth and shiny below; with a roughened cap on the forehead.

Antennæ with fifth segment the longest and thickest. The upper surface of the *body* roughened apparently by the presence of thickly-set minute pores, each of which bears a hair. The border of the first tergite even, not lobate; eleven abbreviated grooves radiate from it towards the centre of the plate, which is elevated and tubercular. The rest of the tergites bear dorsally two parallel rows of crests, each consisting of three (the posterior smaller) rounded tubercles; a similar crest situated on the middle of the lateral surface; the rest of the tergites furnished with tubercles of various sizes. The keels depressed, completely covering the legs, contiguous, those of the 2nd directed forwards, those of the posterior 4 somites directed backwards, those of the 19th, however, not projecting beyond the level of the anal length; the anterior edge of the keel raised and entire, the anterior angle rounded; the lateral margin quadrilobate or trilobate at the anterior end of the body, the posterior angle squared or acute posteriorly, the posterior border straight or concave, notched in correspondence with the grooves that run on to the dorsal and ventral surface. *Pores* apparently absent. *Anal tergite* with two large tubercles on its upper surface, its posterior border trilobate, the median lobe large and rounded. *Sternite* bitubercular. *Sternal areas* as large as in *Polydesmus*, smooth and not spined. In the legs the trochanter is almost as long as the femur.

In the ♀ the sternum of the third somite is produced into an upstanding, trilobate ridge behind the generative aperture.

In the ♂ the keels are considerably less depressed than in the ♀; the sternum of the 8th somite is furnished in front with a pair of tubercles tipped with a brush of hairs, a somewhat similar tubercle being noticeable upon the coxa of the anterior legs of this somite. Copulatory feet crossed in a state of repose, swollen, and hairy at their proximal extremities; the distal sclerite elongate and slender, lightly curved, hollowed behind, terminating in two processes, one short and rounded, the other elongate, blade-like, and directed backwards.

Length of largest example (σ) 16 mm., width 4.5; length of ♀ described 13, width 3.

Locality. St. Vincent (*H. H. Smith*).

"Forest below 1500 ft., under rotting leaves; pretty common."

**PLATYRHACHUS MACULATUS*, *Bollman, Pr. U. S. Nat. Mus.* 1888, p. 336.

Locality. Cuba.

Judging from the description of this species, its most remarkable character is its minute size. Mr. Bollman does not state that his two specimens are immature, yet the length of the ♀ is only 12.8 mm., and of the σ only 9 mm. The following species that I have described is small for the genus, which contains the giants of the family; but it is very much larger than this Cuban form of Bollman's.

PLATYRHACHUS LUCIÆ, sp. n. (Pl. XXXIX. figs. 3-3 d.)

Colour blackish brown above, the cylindrical part of the somites ferruginous, with a median black spot; legs, antennæ, and margins of keels ochraceous.

Head finely granular. *Antennæ* short. *First tergite* about as wide as the head, convex above, and covered with low close-set granules, a distinct row of small tubercles along the anterior border; the second tergite wider than the first and third, its keels like those of the third and fourth, depressed and directed forwards. The keels of the rest small and squared, situated above the middle of the side, and horizontal, although the upper surface follows the slope of the dorsum, the keels of the three posterior somites are directed backwards; the angles of the keels are nearly right angles, the external border lightly convex, entire or subgranular, the lateral portion of the keel marked off from the rest by a longitudinal groove. The whole of the upper surface of the posterior half of the somites somewhat coarsely sculptured, lowly granular, and divided up into areas very much as in *Polydesmus*, s. s., the centre of each area bearing a granule which is slightly more prominent than the rest. The *pores* situated in the posterior half of the keel just above the lateral edge. The lateral part of the segments sparsely and finely granular; the cylindrical very closely punctulate. The *anal tergite* posteriorly convex. *Sterna* smooth or obsoletely granular, but spined. *Legs* short, robust, and hairy.

♂. Flatter than the ♀. Copulatory feet small, curved, terminating in two slender processes, one of which is curled backwards.

Length: ♀, 49 mm., width 7.5; ♂, 45 mm., width 6.5.

Locality. Fond de Jacques, St. Lucia (*G. A. Ramage*).

STRONGYLOSOMA COARCTATUM (*Sauss.*).

Polydesmus coarctatus, *Sauss. Faun. Myr. Mex.* p. 39, fig. 18 (ex *Mém. Soc. Phys. Genève* for 1860).

? *Paradesmus coarctatus*, *Humb. & Sauss. Verh. z.-b. Ges. Wien*, xix, pp. 670, 671 (1869).

Paradesmus vicarius, *Karsch, Arch. Nat.* 1881, p. 38, pl. iii. fig. 8.

Strongylosoma Poeyi, *Bollman, Ent. Am.* iii. p. 81 (1887); *id. Proc. U.S. Nat. Mus.* 1888, p. 336 (as *Paradesmus*).

Localities. Union Island, Barbadoes (*G. Smith*), Dominica (*G. A. Ramage*), Jamaica (*T. Townsend*).

STRONGYLOSOMA SEMIRUGOSUM, *Pocock*, "Contributions to our Knowledge of the Myriopoda of Dominica," *Ann. Mag. Nat. Hist.* (6.), ii. p. 477, pl. xvi. fig. d.

Locality. Dominica (*G. A. Ramage*).

ODONTOPELTIS SUBTERRANEUS (*Sauss.*).

Polydesmus subterraneus, *Sauss. in Linn. Ent.* xiii. p. 323 (1869); *Faun. Myr. Mex.* p. 44, pl. i. figs. 6, 7.

Locality. Cuba (Grotto of Cotilla).

A specimen of this species in the British Museum collection agrees closely with de Saussure's figure and description.

The copulatory foot is somewhat complicated; it consists of two processes closely applied together; the upper one is a somewhat hammer-shaped piece, of which one end of the head is long and produced inwards, with the apex lightly curled; the other piece expands distally, then abruptly narrows to a long, flexible, coiled flagellum.

**ODONTOPELTIS SALLEI* (*Sauss.*).

Polydesmus Sallei, *Sauss. Faun. Myr. Mex.* p. 42, pl. ii. fig. 8.

Locality. San Domingo, Haiti.

According to de Saussure this species approaches the genus *Strongylosoma* so far as the development of its keels is concerned. These organs are widely separated, rise a little above the middle of the side, are horizontal, with the anterior angle rounded, the posterior squared.

Length 34 mm.

*ODONTOPELTIS COULONI (*Humb. & Sauss.*), *Rev. Mag. Zool.* 1869, p. 151; *Miss. Sci. Mex., Myriap.* p. 43, pl. i. fig. 9.

Locality. Cuba.

According to de Saussure this species resembles *R. Sallei*, but is a little larger and flatter; the keels are better developed and situated higher; the upper surface of the metasomites is furnished with a few scattered granules, and the posterior border of each keel has one or two dentiform granules; there is a shallow transverse sulcus between the keels, for the rest the dorsum is smooth and shining.

Length 35–44 mm.

*ODONTOPELTIS MAGNUS (*Bollman*), *Proc. U. S. Nat. Mus.* 1888, pp. 336, 337.

This species was described from Cuba. It was based upon a mutilated female of which the first six segments and the head had disappeared. The fourteen segments that remained measured 22.5 mm. in length, so that the entire specimen must have been upwards of 30 mm. long.

Mr. Bollman declared this species to be related to *O. morantus* of Karsch from Jamaica. It appeared to differ, however, in the presence of an indistinct row of tubercles along the anterior and posterior margins of the segments, and a few on the lateral carinæ.

The upper surface is marked with a transverse sulcus. The keels are large and strongly marginate, the anterior angles rounded and the posterior much produced. The pores are large, subapical and marginal.

Colour brown, legs light chestnut.

*ODONTOPELTIS MAURITII (*Brandt*).

Polydesmus mauritii, *Brandt, Bull. Sci. St. Pétersbourg*, v. p. 311 (1839).

Oxyurus mauritii, *Peters, Monats. Ak. Wiss. Berlin*, 1864, p. 533.

Locality. Porto Rico.

The description given by Brandt is the only one that I have seen of this species. Peters merely refers it to its correct genus.

According to Brandt, the colour is blackish, with the posterior border of the segments pale; all the segments are very smooth above; there is, however, a granule at the base of the keels on some of the segments.

ODONTOPELTIS VINCENTII, sp. n. (Pl. XXXIX. figs. 4-4 d.)

Colour chocolate-brown, keels flavous, with a triangular flavous spot on the middle of the dorsal surface of the keel-bearing portion; antennæ ferruginous; legs and sterna flavous or ochraceous. Smooth and polished.

♀. Robust and parallel-sided. *Antennæ* moderately long and slender; 2nd to 6th segments subequal.

First tergite as wide as the second and the rest, its anterior border convex; the keel well-developed, depressed, its anterior angle convex, posterior rectangular and sharp. The keels of the 2nd and 3rd also well-developed, depressed, and contiguous; that of the 4th much smaller, with its posterior angle strongly produced and dentiform. In the rest of the somites the dorsal surface is not sulcate, the keels rise above the middle, but not at the summit of the side; they are horizontal but small, with convex anterior angle, acute and produced posterior angle; the lateral border thickened, especially round the pore, this thickened area defined in front by a conspicuous notch; lateral surface of somites smooth above, granular below. *Anal tergite* as in *Strongylosoma* or *Paradesmus*. *Sternite* triangular, with the two tubercles before the apex. The sterna wide, not spined. *Legs* of moderate length, the trochanter twice as long as the coxa, the tarsus hirsute and much shorter than the femur.

♂. Slenderer than ♀, but with larger keels. The sternum of the 6th somite excavated. The copulatory feet short, terminating in three subequal prongs, of which the external is stout at the base and very slender and curved distally; the internal much slenderer at the base but less abruptly narrowed; the third, situated above and between the others, is almost filiform.

In the legs the tibia is furnished beneath with a distally directed process, which underlies the proximal end of the tarsus.

Length of ♀ 27.5 mm., width 4 mm.; ♂ 26, width 3.8.

Locality. St. Vincent (*H. H. Smith*). "Common under ru sh."

This species shows considerable variation in colour: in some cases the median yellow spot on the back is entirely absent, and the yellow of the keels much less pronounced; in others the yellow patches are so much enlarged that the brown area is reduced to a single large spot on each side. Since, however, these coloured forms do not appear to differ in other respects, I regard all of them as belonging to the same species.

ODONTOPELTIS MORANTUS (*Karsch*), *Arch. f. Naturg.* 1881, p. 39. (Pl. XXXIX. figs. 5, 5 a.)

Colour brown above, with the keels and hinder border of the tergites flavous; antennæ and legs flavous.

First tergite smooth above, its anterior border evenly convex from angle to angle; posterior border trisinuate, angles acute, dentiform. Second and third tergites smooth or nearly so above, the keels well developed, with convex anterior border, emarginate posterior border, and straight thickened lateral border, the posterior angle acute and produced. The fourth tergite obscurely sculptured above. The fifth and following tergites conspicuously sculptured above, marked with a median longitudinal groove, from which a transverse groove passes on each side, dividing the surface into areas nearly as in *Polydesmus* (s. s.); the lateral portions of the upper surface ornamented with (6) large low subcontiguous tubercles, the posterior of which are subacute, the one that is next to the keel projecting as a conical tooth beyond the posterior edge of the tergite. The *keels* rising just above the middle of the sides, horizontal but not wide, the anterior angle rounded, the posterior acute and spiniform, the lateral border armed in front with a small tooth; a distinct notch in front of the thickened porous area. *Pores* looking upwards and outwards. Lateral surface nearly smooth, with a sharp keel above the base of the legs in the anterior half of the body. *Caudal process* triangular; the apex truncate, with a conspicuous lateral tubercle in front of the apex. *Sternite* obtusely triangular, with a setiferous tubercle in the middle of its lateral border. *Sterna* wide, scarcely emarginate posteriorly.

Legs of normal length; the trochanter about half the length of the femur; the patella and tibia about as long as the tarsus, the three together a little longer than the femur.

♂. Keels a little higher than in female, giving a slightly flatter appearance. Legs a little shorter and more robust.

Copulatory feet short and robust, the apex expanded, compressed, and bent forwards and downwards; two processes arise from the upper (anterior) surface of the femoral segment, near its base; the external of these bends inwards, the internal outwards, the two crossing each other.

Length 20 mm.

Locality. Jamaica (*Brit. Mus. and Berlin Mus.*).

This species seems to differ from all the preceding in the

sculpturing of the dorsal surface, which calls to mind that of the genus *Polydesmus* (s. s.). Another noticeable feature is the presence of the large spiniform tooth on the posterior border of the keel at its base.

ODONTOPELTIS VERRUCOSUS, sp. n. (Pl. XXXIX. figs. 6-6 *d.*)

Colour : head and upper portion of cylindrical part of segments chocolate-brown, the rest of the body (*i. e.*, antennæ, legs, sterna, keels, and keel-bearing part of somites) yellow.

Antennæ elongate, the second to the fifth segments subequal in length and thickness, the sixth the longest.

First tergite about as wide as the second, thickly granular throughout, its anterior border evenly convex, the posterior straight from side to side although lightly sinuate, the lateral portion upturned and carinate, the posterior angle squared and sharp. In the *rest of the somites* the cylindrical part is smooth, the posterior and cariniferous part thickly granular, with a series of six larger granules along the posterior border, and obscurely impressed transversely in the middle. The *keels* well-developed, horizontal, rising at the summit of the sides, the anterior border convex, the posterior correspondingly concave; the posterior angle acute and dentiform, projecting far beyond the hinder border of the tergites, at least in the posterior half of the body; the posterior border bearing a conspicuous tubercle near the point of origin of the keel, the rest of the hinder border denticulate; the lateral border dentate and denticulate; the keels that bear pores furnished with a strong median notch. The *pores* lateral but looking slightly upwards, situated in a depression in front of the posterior angle; area below the keels granular; granular crests above the legs at the anterior end of the body. The *anal tergite* narrowed, but truncated apically, furnished apically with two piliferous tubercles and laterally with others. *Sternite* triangular, the two tubercles situated in front of the posterior margins. *Sterna* wide, smooth, and not spined. *Legs* elongate and closely hairy, the 1st, 2nd, 4th, and 5th segments about equal in length, also the 3rd equal to the 6th and as long as two of the others.

♂. Slenderer than female, with keels a little more elevated, the sternum of the 4th and 5th somites bearing two hairy tubercles.

Copulatory feet short, robust, contiguous but not crossing;

each consisting of two processes which are very unequal in size—the larger expanded distally, hollowed and curved outwards at the apex; the shorter, also curved, is directed upwards and forwards on the inner surface of the larger.

Length of ♀ 24 mm., width 3·5; ♂ 23, width 3.

Locality. Jamaica (*T. D. A. Cockerell and T. Townsend*).

Evidently allied to the preceding, but differing in very many points. Thus the upper surface is thickly granular, the sculpturing less clearly defined, the tooth at the base of the posterior border of the keel larger, &c.

ODONTOPELTIS FORMOSUS, sp. n. (Pl. XXXIX. fig. 7.)

Closely allied to *O. morantus*, Karsch.

♀. *Colour*: upper surface with a wide flavous median dorsal band, brown laterally, with the external portion of the keels also flavous; head and anal somite entirely brown; antennæ and legs flavous, the latter proximally slightly darker. *Body* robust and nearly flat, the keels being horizontal and rising near the summit of the sides. The *first tergite* with evenly convex anterior border, acutely-angled keels, and mesially emarginate posterior border. The *rest of the segments* smooth and polished, but sculptured almost as in *Polydesmus* (s. s.), being divided by a median longitudinal sulcus and by a transverse sulcus; the area behind the transverse sulcus divided into two transverse series of polygonal areas: from each of the two external areas of the posterior series springs a backwardly directed spiniform tooth; of these teeth the external is larger than the internal, and is situated at the point of origin of the keel, the internal of them is smaller and is not present on the 1st, 18th, and 19th segments. The anterior area of each segment furnished with two setiferous tubercles. *Keels* moderately large, the anterior border convex, posterior border deeply concave; external border dentate, and furnished with two spines in its anterior half, the posterior of these being formed by a deep notch, which marks off the thickened porous area; anterior angle of the keel rounded, the posterior acutely produced. *Pores* large, looking upwards and backwards.

Total length 17·5 mm.

Locality. Mandeville, Jamaica (*T. D. A. Cockerell*).

This species may be at once recognized from *O. morantus* by the denticulation of the lateral margin of the keels, its more pronounced sculpturing, and different arrangement of the colours.

ODONTOPELTIS MAMMATUS, sp. n. (Pl. XXXIX. figs. 8-8 b.)

Allied to both the preceding.

♂. *Colour* black, legs ferruginous. Slender, flat-backed. *Keels* large and horizontal, formed almost as in *O. formosus*, but with the posterior angle of the keels more produced and the whole sculpturing much less like that of a genuine *Polydesmus*; the upper surface of each segment adorned on each side with seven mammiform excrescences, three of these along the posterior row being more spiniform and directed backwards, especially the external, which has the form of a large tooth at the point of origin of the keel.

Legs and antennæ long.

Copulatory feet very short (as in figs. 8 a, 8 b).

Length 17 mm.

Locality. Mandeville, Jamaica (*T. D. A. Cockerell*).

II. MALACOPODA OR PROTOTRACHEATA.

Any one versed in the problems of geographical distribution and acquainted with the wide range, probable antiquity, and secluded life of the species that have hitherto been included under the genus *Peripatus*, would have been perfectly justified in concluding from analogy that the species from each of the different regions would possess certain characters in which they would resemble each other and differ from the species inhabiting the other regions.

That this is in reality the case is now an established fact; for the species from the Neotropical Region may be distinguished from those from Africa and Australia, and those from the latter two Regions from each other, by both external and internal characters; or, to put it differently, the species fall into three groups equivalent to, or indeed of considerably greater value than, the genera of other orders of animals.

Setting aside for the moment the less easily ascertained characters, which may be found detailed in Prof. Sedgwick's monograph, I propose to distinguish these genera by the following characters and names:—

- a. The legs furnished with four spinous pads; the generative aperture in the adult always situated between the legs of the penultimate

- pair. Neotropical Region and possibly Su-
 matra PERIPATUS, Guilding.
 Type, *juliformis*, Guilding.
- b. The legs furnished with only three spinous
 pads; the generative aperture behind the
 penultimate pair of legs.
- a¹. Generative aperture between the legs of the
 last pair and well in advance of the anus.
 Australia and New Zealand PERIPATOIDES, nov.
 Type, *novæ-zelandiæ* (Hutton).
- b¹. Generative aperture behind the last pair of
 fully developed legs and close to the anus
 at the hinder end of the body. S. Africa... PERIPATOPSIS, nov.
 Type, *capensis* (Grube).

In the above brief diagnosis of *Peripatus*, Guilding, I have advisedly inserted the words "in the adult" after the statement respecting the position of the generative aperture, because in some immature individuals of this genus the posterior pair of legs of the adult is not fully developed, and the orifice in question then appears to be between the legs of the last pair. This at least is the case in one specimen of *P. Imthurni*, with 30 pairs of legs and 29 mm. long, that was collected in Demerara by Mr. J. J. Quelch. That the young sometimes have an imperfect number of legs was first pointed out by Dr. Ernst. Prof. Sedgwick, however, contested this view on the ground that it did not apply to any of his specimens. The Venezuelan naturalist, nevertheless, was not altogether in error, although his generalization from his observations has not proved to be justifiable.

Although specimens of *Peripatus* are known from a great many of the W. Indian Islands, as a glance at the following list of names of localities and so-called species will show, our knowledge of the actual number of the species represented in the fauna of the Antillean subregion is deplorably imperfect. That the specimens are to be referred to several species is highly probable, but their limits and extent can only be ascertained by an examination of long series of well-preserved examples from the different islands. It is to be hoped that residents in the West Indies will strive to contribute towards this end by collecting specimens of this interesting genus, killing them by drowning and making notes of their colours before immersing them in alcohol for preservation.

The characters which have been most used for distinguishing the species are: (1) the number of legs, (2) the form of the skin-papillæ, (3) colour, and (4) the dentition of the jaws. The last is troublesome to determine, and is not on that account likely to be very much patronized, and unless its validity has been tested in a large number of cases it should be employed with very great caution*. Colour unfortunately is very liable to destruction by the alcohol. So, too, does the form of the papillæ seem to be affected by this preservative. These papillæ are contractile processes of the skin: when distended they in nearly all cases are seen to consist of a conical or cylindrical basal portion tipped with a slender, subcylindrical, setiferous distal portion; when contracted they are rounded and dome-shaped, with a distinct circular depression on the summit; at intermediate stages the distal portion appears like a button-shaped cap upon the basal portion; moreover it appears that the shape of these organs may be different when they are viewed from the front and the side. All these facts point to the conclusion that the form of the papillæ cannot, at present at least, be greatly relied upon for distinguishing the species. As for the number of the legs, they differ according to sex, and vary within undetermined limits in the sexes.

These considerations will show how purely provisional must be regarded all our conclusions respecting the validity of the species enumerated below.

PERIPATUS JULIFORMIS, Guilding.

P. juliformis, *Guilding, Zool. Journ.* ii. p. 443, pl. 14 (1826); also in *Isis*, xxi. p. 158, pl. ii. (1828); *Sedgwick, Quart. Journ. Micr. Sci.* xviii. p. 478; *Pocock, Nature*, vol. 46, p. 100.

P. Edwardsii, *Sedgwick, op. cit.* pp. 467-473 (? *Edwardsii*, *Blanchard*).

Colour (in alcohol): the dorsal surface varying from almost black to a greyish brown or fawn; viewed with a lens, distinctly mottled, the mottling being attributable to the circumstance that the papillæ are of a paler tint than the skin which supports them; there is a dark more or less clearly defined narrow median dorsal longitudinal band, this band being apparently mostly due to the discontinuity of the papillæ across the middle line of the back, which permits the darker colour of the skin to be

* I refer here merely to the small series of teeth on the inner blade of the jaw.

seen without interruption; the ventral surface is pale, and varies from fawn- to flesh-coloured. One specimen, which seems to have so far suffered less than the others from the action of the spirit, has the dorsal surface nearly black and the ventral distinctly flesh-coloured; the antennæ are rather darker than the rest of the dorsal surface; the legs are externally the same colour as the dorsal surface, and internally pale like the ventral.

The principal *papillæ* vary in form according as they are lengthened or contracted; when contracted, as on the dorsal surface of the largest specimen from St. Vincent, they are circular at the base and rounded at the summit, without any visible distal portion; when lengthened, the basal portion becomes narrower and more cylindrical, and a distal portion, tipped with one, two, or very rarely three setæ, projects from its summit, the whole papilla then resembling in appearance a short candle-end in a cylindrical candle-stick; sometimes the distal portion is expanded at its apex.

Blades of the jaw seem to be like those of the Caraccas species described by Sedgwick; thus the outer has a single tooth at the base of the fang, while the inner has a single very similar tooth at the base of the fang; and this is followed by a series of seven subequal but much smaller teeth.

Legs vary in number from 29 to 34 pairs; there are two papillæ on the anterior aspect of the feet: the claws are lightly curved; those of the last pairs are smaller than those that precede them, and have two instead of four pads. Some of the posterior legs in the male are furnished with one or two white tubercles, the distribution of which in the posterior six pairs in one example is as follows:—24th 2-0; 25th 1-1; 26th 2-1; 27th 1-1; 28th 0-0; 29th 0-0.

Female larger than male, with 33 or 34 pairs of legs; male with 29 or 30 pairs.

Measurements of largest specimens: female, length 44 mm., width 6 mm.; male, length 26 mm., width 4·5 mm.

Locality. St. Vincent (*H. H. Smith*).

Of this species I have seen six specimens: four females, two having 34 and two 33 pairs of legs, and two males, one with 29, the other with 30 pairs of legs.

With the first set of this species sent by Mr. Smith is the following note: "Rare in rotten wood and decaying leaves."

Another specimen, subsequently obtained, was found in the forest at an altitude of 1000 feet under rotten leaves.

There are, I think, no reasonable grounds for doubting that these specimens are referable to the species named *juliformis* by Guilding—a species based upon an example from the same locality, which was said to have 33 pairs of legs. So, too, does it seem that they are almost certainly co-specific with the specimens from Caraccas described as *Edwardsii* by Sedgwick. For the two sets of specimens agree in colouring, number of legs, armature of jaws, and apparently in the shape of the papillæ. As for *Edwardsii* of Blanchard, I suspect that it has been redescribed as *Imthurni* by Sclater; for it is more probable that a specimen from French Guiana should be co-specific with others from British Guiana rather than with a third set from Caraccas. Moreover, bearing in mind the fact that males seem to be scarcer than females, it seems more likely that the type of *Edwardsii* was of the latter sex than of the former. If this prove to be the case, this type will agree with the female of *Imthurni*, and differ from that of *juliformis* in the number of its legs.

PERIPATUS TRINIDADENSIS, *Sedgwick*.

P. Edwardsii, *Kennel, Arb. Zool. Inst. Würz.* vi. p. 282, 1884 (? *P. Edwardsii*, *Blanchard, Ann. Sci. Nat.* (3) viii. p. 140, 1847 = *P. juliformis*, *Aud. & Edw. Ann. Sci. Nat.* (1) xxx. p. 413).

P. trinidadensis, *Sedgwick, Quart. Journ. Micr. Sci.* xxviii. p. 377.

Colour of dorsal surface chocolate-brown, of ventral surface light brown.

Papillæ with basal part conical, as in the specimens from Demerara named *Imthurni*. The inner blade of the jaws furnished with a larger number (10-11) of minor teeth.

Number of pairs of legs 28-31.

Locality. Trinidad; Dominica (*G. A. Ramage*).

Mr. Ramage obtained at Laudat in Dominica three female examples of a *Peripatus*, each having 30 pairs of legs, which seem to be specifically identical with Kennel's specimens from Trinidad. Kennel identified his examples as *Edwardsii* of Blanchard, and very possibly quite correctly. Prof. Sedgwick, however, acting upon the supposition that his specimens from Caraccas were *Edwardsii* of Blanchard, and recognizing their distinctness from Kennel's examples, proposed the name *trinidadensis* for the latter. This name can provisionally stand until the veritable *Edwardsii* is rediscovered.

I have not seen any specimens of *Peripatus* from Trinidad with which to compare these Dominican individuals. Two of them, however, were sent by Prof. Bell to Prof. Sedgwick, who stated (in MS.) that they were more nearly related to *trinidadensis* than to any other Neotropical species. Certainly the third, and largest, specimen, which was, I believe, not seen by Prof. Sedgwick, possesses at least as many as ten minor teeth on the inner blade of the jaw of the left side; so in this character, as well as in the number of its legs and shape of its papillæ, it agrees with Prof. Sedgwick's *trinidadensis*. There can be very little doubt, I think, as to the distinctness of this form from *juliformis*; but I am strongly disposed to think (1) that it will prove to be the same as the Demeraran species *Imthurni* †, Sclater (= *demeraranus*, Sedgw.), and (2) that both names will have to be added to the synonyms of *Edwardsii* of Blanchard. *Imthurni* and *trinidadensis* apparently agree in the conical‡ form of their papillæ as well as in the number of legs in the female. The males, however, are unknown.

**PERIPATUS TORQUATUS*, Kennel, *Arb. Zool. Inst. Würz.* vi. p. 282; *Sedgwick, Quart. Journ. Micr. Sci.* xxviii. p. 477.

"Colour of dorsal surface red-brown, the middle of the back being somewhat darker, and paling off towards the sides. Head and tentacles black, and marked off from the body on the dorsal side by a bright yellow band, which often shows a small interruption in the middle line. Ventral surface has a dark flesh-colour."

Number of pairs of legs 41-42.

Length of female 150 mm., width 8 mm.; length of male 100 mm.

Locality. Trinidad.

This appears to be a well-marked species on account of its large number of legs and the presence of the yellow band behind the head.

† Described briefly by Mr. W. L. Sclater on p. 133 of the P. Z. S. for 1887, and subsequently named in the 'Quart. Journ. Micr. Sci.' xxviii. p. 344; on p. 476 of the latter volume Prof. Sedgwick proposed the name *demeraranus* as a substitute for *Imthurni*.

‡ On pp. 475-476 of the monograph Prof. Sedgwick points out that in *demeraranus* the principal papillæ have conical bases, and thus differ from the same structures in his *Edwardsii*, which are cylindrical but in his brief diagnosis of *demeraranus* on p. 476, and again on p. 488, he says "*cylindrical primary papillæ.*"

PERIPATUS JAMAICENSIS, *Grabham & Cockerell, Nature*, vol. 46, p. 514 (1892).

"Colour dark purplish brown, with no dark median dorsal line, the ends of the antennæ sometimes pure white.

"Number of pairs of legs 29 and 36; the claws are only slightly curved, and not hooked as in Prof. Sedgwick's *P. Edwardsii*.

"*Papillæ* are of two kinds."

I have seen no fuller description of this species than that cited above.

Presumably the three Jamaican specimens in the British Museum, briefly described by Prof. Sedgwick on p. 482 of his monograph, belong to the same species. These specimens are in a fairly good state of preservation; they are of a uniform dark brown above, paler beneath. Two of them, probably females, have 31 pairs of legs, and the papillæ are, as usual, of two kinds, large and small, the smaller lying between the larger: the latter, when seen from above, are circular in outline; when seen from the side, conical, the summit either is circularly depressed or supports a subcylindrical setiferous distal portion. The claws are normally curved as in *P. juliformis* and *P. trinidadensis*.

The third specimen has 37 pairs of legs, each leg of the 34th and 35th pairs being furnished with two enlarged tubercles, such as characterize the male of *P. juliformis*. These tubercles are not very obvious, and appear to have been overlooked by Prof. Sedgwick. The papillæ on the dorsal surface seem to be all of one kind; they are small, conical in outline, close-set, and tipped with a seta. Thus in three points this specimen seems to differ from the other two—namely, in the greater number of its legs, the form of the papillæ, and the presence of two enlarged tubercles on two of the posterior pairs of legs. The last is probably of a sexual nature; it seems possible, too, that the first is also, in which case this species presents a curious variation from *P. juliformis*, in which the males have fewer legs than the female.

Another specimen in the British Museum appears to be referable to this same species, although it differs considerably in colour from Gosse's examples. This is the Dominican individual obtained by Mr. G. F. Angas. This specimen has already been briefly reported upon by Prof. Bell, Mr. Sclater, and Prof. Sedgwick; but these authors seem to have omitted to state that the distal third of each antenna is pale yellow, and contrasts

strongly with the rest of the appendage, which is deep black ; the back of the head is also pale, apparently somewhat as in *P. torquatus* ; the sides of the body are purplish brown, the middle portion of the upper surface is pale reddish brown, obscurely mottled, and marked with a deep-coloured median dorsal line. The external surface of the legs is pale coloured, and not of the same tint as the upper surface of the body.

There are 29 pairs of legs, as in one of the specimens mentioned by Dr. Grabham and Mr. Cockerell.

The large and small papillæ are arranged as in the female Jamaican specimens ; but the former are distinctly antero-posteriorly compressed, and appear in outline to be conical or cylindrical, the variation in form depending upon the aspect from which they are examined. Each supports, as usual, a shorter or longer button-shaped or subcylindrical setiferous distal portion.

In addition to the specimens from the above-mentioned islands, unidentified examples of *Peripatus* have been reported from Cuba, Porto Rico, St. Thomas, and St. Croix.

SUPPLEMENTARY NOTE.

Since the above was written, three additions have been made to the literature of West-Indian Peripatidæ. The first is a paper by Dr. Grabham, published in vol. i. of the 'Journal of the Institute of Jamaica,' p. 217, in which further information respecting *P. jamaicensis* is to be found.

From this paper it appears that in the females of *P. jamaicensis* the legs vary in number from 29 to 43. The colour, moreover, also varies considerably. Some examples are entirely black above, including the antennæ, and dark brown on the underside ; others are pink or flesh-coloured, with a row of rusty-red markings along the back, and the extremities of the antennæ are pure white. It is interesting to note that the embryos taken from parents of either type of coloration have white-tipped antennæ and flesh-coloured mottled skins like those of the second type. Subsequently Mr. Cockerell (Zool. Anz. xvi. p. 341) has proposed names for these two forms of *P. jamaicensis*. But since they appear to be neither varieties nor species, this author terms them mutations. Thus we have "mutation" *Gossei*," with reddish skin and white-tipped antennæ, and "mutation" *Swainsonæ*, with black skin and uniformly coloured antennæ.

The third paper is an account of the anatomy of a *Peripatus* from Dominica, by E. C. Pollard, published in vol. xxxv. pt. 2, of the Quart. Journ. Micr. Sci. 1893. This *Peripatus* is incidentally named *P. dominicæ* on p. 290. It is said to differ from *P. Edwardsii* of Sedgwick in that (1) it has from 25 to 30 pairs of legs instead of 29 to 34, and in that (2) there are on the legs no white papillæ, such as are found in the males of *P. Edwardsii*. Moreover, it differs from *P. trinidadensis* in the number of its appendages, the latter having 28–31 pairs, and in the number of teeth on the inner blade of the jaw, *trinidadensis* having a much larger number. And, lastly, in *dominicæ* the primary papillæ are cylindrical, while in *trinidadensis* they are conical.

The obvious question that arises in connection with these specimens of *P. dominicæ* is:—Are they or are they not co-specific with the examples mentioned above which were obtained in the same island and by the same collector? The latter examples certainly seem to differ from those described by E. C. Pollard in their dentition and in the form of the papillæ. But I confess that I am still sceptical concerning the value that is to be attached to these characters. As for the number of legs, since these appendages vary from 26 to 30 pairs in the females examined by E. C. Pollard, it is hard to find rational grounds for considering that female examples from the same island, in which the legs vary in number from 28 to 31 pairs, belong to a different species.

Lastly, concerning the Dominican individual obtained by Mr. Angas. In the number of its legs, as well as in colour, it agrees with the majority of the examples examined by E. C. Pollard, and the papillæ are cylindrical, when examined from the side; so there can be little doubt that it is referable to *P. dominicæ* of Pollard. But since Dr. Grabham and Mr. Cockerell have shown that in the Jamaican *Peripatus* a similar colouring may or may not occur, we are still in doubt as to whether *dominicæ* is specifically different from *jamaicensis*, and as to whether it may not be merely a "mutation" of *trinidadensis*. I am inclined to the latter opinion.*

* See Additional Note on p. 542.

III. SUPPLEMENT *on the PEDIPALPI of the West Indies.*

On page 404 of the present volume I fell into the error of regarding the West-Indian specimens of the genus *Tarantula* (= *Phrynus* of authors) as belonging to but one species. During the past month, however, a more detailed study of the rich material of this group contained in the collection of the British Museum has shown me that this is very far from being the case.

As a result of this study, I venture to propose the following new species of the genus. At the same time I deeply regret that I have, with one exception, failed in my attempt to identify any of the species established by previous authors. It is therefore highly probable that I have unknowingly renamed some or all of them.

In the paper above referred to I have given my reasons for considering that the genus in question should bear the name *Tarantula*. For the type of the genus *Tarantula* of Fabr. is a species named *reniformis* by Linnæus; Linnæus having based his species upon the figure, published in Brown's 'History of Jamaica,' of one of the members of this group which was reported from the Island of Antigua. Now this figure incontestably represents an animal congeneric with all the species described below, and with only remote affinities with the S.-American Pedipalp to which Mons. Simon proposed to restrict the term *Tarantula* *.

The following synoptical table will, it is hoped, help in the rapid identification of the species here described. It must not be supposed, however, that the species enumerated necessarily differ solely in the characters mentioned.

Synopsis of the West-Indian Species of Tarantula.

- a. Tibia of the chela armed above with 9 spines, of which the 3rd from the proximal end and the 4th from the distal end are the longest, there being *two* spines between these long ones *viridiceps*.
- b. Tibia of the chela armed with 8 spines, of which the 3rd from the proximal and 4th from the distal end are the longest, with only *one* spine between these long ones.
- a¹. Tibia of chelæ slender, the longest spine longer than the width of the segment †; lateral eye-groups mostly closer together, the distance between them

* This Pedipalp is consequently without a name. I therefore propose that it be called *Heterophrynus*, with *chiracanthus* of Gervais as the type.

† The width in this and all cases is taken from the upper inner edge to the under outer edge.

- only a trifle greater than half the median length of the carapace, the anterior margin of which is more coarsely dentate laterally than mesially. Median ocular tubercle close to the anterior edge. Mandibles with an enlarged terminal tubercle.
- a*². The six spines on the tarsus of the chela well developed; frontal process almost concealed.
- a*³. Legs exceedingly long, femur of the 1st more than twice, and tibia of 2nd equal to twice, the width of the carapace; 2nd tibial of 4th leg as long as the distance between the eyes. . . . *longipes*.
- b*³. Legs shorter, femur of first and *à fortiori* tibia of 2nd less than twice the width of the carapace; 2nd tibial of 4th leg shorter than distance between the eyes *spinimana*.
- b*². The 1st and 3rd spines on the lower edge of the tarsus of the chela nearly obsolete; apex of the frontal process projecting forwards between the mandibles. *tessellata*.
- b*¹. Tibia of chelæ stouter, spines shorter, none of them being so long as the segment is thick; the 1st and 3rd inferior spines on the tarsus of the chela nearly obsolete.
- a*⁴. Distance between the lateral eyes about half the median length of the carapace or less; the lateral teeth of its anterior border enlarged . . . (Blanch.). *Pallasii*
- b*⁴. Distance between the eyes noticeably greater than half the median length of the carapace.
- a*⁵. Distance between the median ocular tubercle and the anterior edge equal to about twice a diameter; the 1st spine on the upperside of the tarsus of the chela nearly obsolete; frontal process concealed.
- a*⁶. Eyes less widely separated; frontal border narrower and more coarsely dentate; with 8 superior spines on the tibia *Keyserlingii*.
- b*⁶. Eyes more widely separated; frontal border wider and more finely dentate, with 7 superior spines on the tibia *latifrons*.
- b*⁵. Distance between the median tubercle and the anterior border less than a diameter; 1st superior tarsal spine of chela longer; frontal process not concealed *barbadensis*.

Family TARANTULIDÆ, *Karsch.*Subfam. TARANTULINÆ, *Simon.*Genus TARANTULA*, *Fabr.*

Tarantula, *Fabricius, Ent. Syst.* vol. ii. p. 432, 1793, for *Phalangium reniforme* of *Linnaeus*.

Phrynus, *Lamarck, Syst. An.* p. 175 (1801); *Latreille, Hist. Nat. Crust. Ins.* iii. p. 48 (1802).

Admetus, *C. Koch, Uebersicht des Arachnidensystems*, pt. v. p. 81.

TARANTULA BARBADENSIS, sp. n. (Pl. XL. fig. 1.)

Colour: carapace and chelæ chestnut-red; the former with postero-lateral border flavous; abdomen ochraceous, with scarcely a trace of a pattern; legs fusco-ochraceous, paler than the chelæ, with very faintly defined flavous spots on the femora.

Carapace not coarsely granular, its frontal border widely emarginate, evenly denticulate, and not overlapping the base of the vertical median triangular process, which is easily visible throughout its length from above and has its apex not turned forwards; median ocular tubercle transverse, separated from the front border by a space which is less than its longitudinal diameter; distance between the lateral eyes equal to about two-thirds the median length of the carapace and equal to the length of the upperside of the femur of the chela; the lateral eyes a

* Readers of this paper, who are unfamiliar with the problems of zoological nomenclature, must be warned that in a systematic zoological sense *Tarantula* is not a spider.

In the vulgar tongue the term *Tarantula* is indiscriminately applied to any large formidable-looking animal of the spider kind. The original *Tarantula* is of course one of the Italian hunting-spiders, or Lycosidæ. But our friends in the United States have transferred the name to one of their so-called Mygalidæ. I have even heard a *Galeodes* thus nicknamed, and I am told that the *Tarantula* of the Queensland settlers is the spider named *Holconia immanis*, one of the Sparassidæ. But in a zoological sense the *Tarantula* is not a spider at all, but one of the so-called Pedipalps.

The term appears to have been first used in zoological nomenclature to designate a definite genus by Fabricius in 1793; and this author was perfectly within his rights in applying the term to those animals which were subsequently called *Phrynus*. Dr. Thorell, it appears, would like still to preserve the name *Phrynus* instead of *Tarantula*, and I confess that he has my full sympathy in so wishing. But I can find no logical grounds to justify the change; and however much one may regret Fabricius's choice of the name, no one, it appears to me, has the right to revoke his decision.

little nearer to the lateral than to the anterior border, the latter distance less than half the distance between the eyes.

Mandibles scarcely granular above, and without an enlarged terminal tubercle.

Chelæ robust. *Trochanter* armed with 5 spines, 3 of which are inferior. *Femur* coarsely granular above, finely below, armed above with 5 spines, the first of which is double and much shorter than the second, which is shorter than the third, the fourth of median size, the fifth minute; armed below with 5 spines and about 2 spinules; the first spine a little longer than the second, third and fourth about equal and much shorter than the second, fifth not much larger than a spinule; the longest of these spines less than the height of the femur. *Tibia* robust, much wider than its longest spine; 8 spines above, the first, seventh, and eighth minute; the second, fourth, and sixth progressively decreasing in length towards the distal end of the segment, all of them shorter than the third and fifth, which are about equal; the lower edge armed with two long spines and three short ones; third spine on the tarsus longish, the first small; the first and third on the lower side minute.

Legs: femur of 1st longer than the width of the carapace by about one-third of its length, that of the 2nd a trifle greater than the width of the carapace and a trifle shorter than the femur of the 3rd, that of the 4th the shortest; tibia of 2nd equal to its femur, that of the 3rd a trifle longer, that of the 4th noticeably longer than its femur; the second and third tibials about two-thirds the length of the first, but a little shorter than the protarsal; the second tibial about half the length of the third and about one-third of the distance between the eyes.

Measurements in millimetres:—Total length 19; width of carapace 11·2, median length 7, distance between eyes 4·5. *Chelæ*: length of femur (upper side) 4·5, height 2·6, length of longest spine 2; tibia, length 7·2, width 3, length of longest spine 2·5; length of tarsus 3·5, of digit 4. *Legs*: femur of 1st 16·2, of 2nd 11, of 3rd 12, of 4th 10; tibia of 2nd 11, 3rd 12·5, 4th 11.

Locality. Barbadoes (*Col. Feilden*). Three adult examples, 2 ♂, 1 ♀.

The sexes of this species show no marked secondary sexual characters.

TARANTULA TESSELLATA, sp. n. (Pl. XL. fig. 2.)

T. reniformis (Linn.), Pocock, *Journ. Linn. Soc., Zool.* vol. xxiv. p. 404.

The description already published in the present volume was taken from a large example of a *Tarantula* obtained in the Island of St. Vincent, W. Indies, by Mr. H. H. Smith.

I now offer the following supplement to that description:—

Granulation of trunk coarse.

Carapace flattish, its frontal portion gently sloped downwards and forwards. The distance between the eyes considerably more than half the median length of the carapace and a little more than twice the distance between a lateral eye-cluster and the front or side edge of the carapace; median tubercle a little wider than long, its long diameter about equal to the distance that separates it from the anterior edge; this edge distinctly concave, finely dentate mesially, very coarsely dentate laterally, the lateral teeth directed upwards, the frontal process scarcely overlapped, its apex turned directly forwards and projecting as a distinct spike between the base of the mandibles.

Mandibles granular above, with two terminal tubercles enlarged, but the external the largest.

Chelæ coarsely granular above and below. *Femur* longer by about one-third of its length than the distance between the eyes; armed almost as in *T. barbadensis*, but with the spines longer and the first rising from the base of the second, which thus appears double; the second spine directed more upwards than the third, the first inferior spine as long as the height of the femur. *Tibia* rather narrow, much narrower than its longest spine; the spine armature above and below the same as in *T. barbadensis*, as also is it of the tarsus.

Legs long; femur of the 1st greater by nearly half its length than the width of the carapace, that of the 2nd exceeding the width of the carapace by about one-quarter of its length, equal to the femur of the 3rd and considerably excelling that of the 4th; tibia of 2nd equal to its femur, that of the 3rd greater by half the patella, that of the 4th greater by the whole of the patella; the second and third tibials of the 4th two-thirds the length of the first and longer than the protarsus, the second tibial distinctly longer than half the length of the third and equal to about half the distance between the eyes.

Measurements in millimetres:—Total length 28; carapace,

median length 10·5, width 17, distance between eyes 6. *Chela*: femur, length above 9·5, height 3·5, length of longest spine 3·5; tibia, length 13·5, width 4·2, length of longest spine 5; length of tarsus 6, of digit 5·8. *Legs*: femur of 1st 28·5, of 2nd 21, of 3rd 21, of 4th 17·5; tibia of 2nd 21, of 3rd 23·5, of 4th 20·5.

Locality. St. Vincent (*H. H. Smith*), many examples; Grenada (*H. H. Smith*), one young specimen; Santa Lucia (*G. A. Ramage*), three adult specimens.

Most of the examples from St. Vincent were found under the bark of a stump, in August, at an altitude of 150 ft.; two more, however, both young, were discovered in March under a stone at an altitude of 1000 ft., while a single young example from Grenada was obtained under a stone at the sea-level.

The series from St. Vincent shows some interesting structural variations. The above description is taken from the largest male that was least fractured. Another specimen, however, also a male, which was considerably damaged about the limbs, is a good deal larger, measuring 34 mm. in length, with the carapace 19 mm. wide. In other respects, however, so far as can be told, this example does not differ from the type; nor indeed do three other males, which have the carapace respectively 16, 15, and 13·5 mm. in width, except that they show that the second tibial of the 4th leg may be only about half the length of the third and the two together not longer than the protarsus, while two young males with the carapace 9·5 and 9 mm. wide have the said protarsus slightly longer than the said tibials, the chela shorter, and the distance between the eyes slightly less.

An adult female, with egg-sac, from St. Vincent, measuring 24 mm. long, with the carapace 14 mm. wide, has the chelæ and legs shorter than in the adult males, the femur of the chela being greater than the distance between the eyes by about one quarter of its length. The segments of the legs give the following measurements:—femur of 1st 21, of 2nd 15, of 3rd 15·8, of 4th 13; tibia of 2nd and 4th 14·5, of 3rd 16. These show that the femur of the 4th is less than the width of the carapace, instead of greater, as in the males.

Three adult examples from Santa Lucia, which appear to be specifically identical with the specimens from St. Vincent, are of interest, inasmuch as the female, which measures 26 mm., with the carapace almost 16 in width, has the chelæ and legs of the same length as in the males from St. Vincent, whereas the

argest male, which measures about 29 mm., with the carapace almost 18 wide, has the femora of the 1st leg very short, only as long, in fact, as the tibia of the 2nd.

TARANTULA PALLASII (*Blanch.*)*. (Pl. XL. figs. 3, 3 a.)

Phrynus Pallasii, *Blanch. Organisation du Règne An.*, Arachnides, pt. xv. p. 170, pl. 10, &c.

Colour. Carapace and chelæ chestnut-brown; legs and abdomen paler, the latter paler than the legs and without distinct pattern; spots on femora and carapace very indistinct.

Granulation of the upper surface of the trunk rather coarse.

Carapace with its frontal region gradually and gently sloped downwards, nowhere vertical; distance between the lateral eyes about half the median length of the carapace, the tubercles equidistant from the anterior and from the lateral edge, which distance is almost half the distance between the eyes. The median tubercle scarcely wider than long, distance between it and the anterior border a little greater than its longitudinal diameter; the frontal border distinctly emarginate, coarsely dentate at the sides; the teeth very slightly upcurled.

Mandibles almost smooth above; external apical tubercle large.

Chelæ coarsely granular; *tibia* broad; the *femur* above about one-third greater than the distance between the eyes; spines short, the longest on the femur less than the height of the segment, and a trifle more than half the distance between the lateral eyes; the longest on the tibia (*i. e.* the third, which is much longer than the second) less than the width of the segment and about equal to three quarters of the distance between the eyes. The *spine-armature* like that of *barbadensis*, except that the 2nd spine on the upper edge of the tibia is shorter as compared with the 3rd, and there is a minute spinule at the base of the 6th. *Tarsus* smooth externally, a little longer than the distance between the eyes, armed below with one median long spine, the other two being represented merely by small spinules.

Legs: femur of 1st longer than the width of the carapace by about one-third of its length; femur of the 2nd noticeably greater than the width of the carapace, about as long as that of

* I had described this species as new before I had an opportunity of examining Blanchard's paper. I there discovered that his specimen came from Martinique, whence the British Museum also has received examples.

the 3rd, and distinctly longer than that of the 4th; tibia of 2nd equal to the femur, that of the 3rd a little greater than its femur or just equal to it, that of the 4th greater than the femur; the second and third tibial segments a little less than two-thirds the length of the first and a little shorter than the protarsus; the second tibial more than half the length of the third, and equal to half the distance between the lateral eyes; the protarsi less than half the length of the tibiæ.

Measurements in millimetres.—Total length 19; carapace, median length 7·8, width 12, distance between eyes 4. *Chela* femur, length 6, height 3, length of longest spine 2; tibia, length 8·5, thickness 3, length of longest spine 2·6; length of tarsus 4·2, of digit 4. *Legs*: femur of 1st 19, of 2nd 14, of 3rd 14·2, of 4th 11·5; tibia of 2nd 14, of 3rd 15, of 4th 13·5.

Locality. Montserrat and Martinique.

The British Museum has upwards of a dozen examples which I refer to this species. Unfortunately all the large ones have no locality, and are structurally imperfect in one respect or another. This has compelled me to select a small example for description; but a study of the other specimens shows that the variation in characters is only slight. The colour approaches black, especially upon the carapace and chelæ; and the granulation is coarser. The largest example measures 25 mm. long, the carapace being 15 mm. in width and 10 in median length, the distance between the eyes being 5. Moreover the chela is longer, its femur being equal to nearly twice the distance between the eyes. In other respects, however, this specimen (probably male) agrees closely with the type, which is certainly male. Other examples, some of which are certainly female, have the legs shorter, the femur of the 2nd equalling the width of the carapace, the tibia of the 2nd and 3rd being also about equal.

This species seems nearly allied to *T. Goëssii*; but, according to Dr. Thorell, in the latter species the distance between the eyes is almost three times as great as the distance between either lateral cluster of eyes and the edge of the carapace. *T. Goëssii*, moreover, appears to be considerably larger, since it attains a length of 37 mm.

TARANTULA SPINIMANA, sp. n. (Pl. XL. figs. 4, 4 a.)]

Colour (dry specimen). Carapace and chelæ fusco-castaneous; legs paler, with two ill-defined flavous spots on the femora;

terga fusco-ochraceous, fuscous for the most part in front, ferruginous behind.

Carapace rather finely granular; distance between the lateral eyes a little more than half the median length of the carapace; each tubercle about equidistant from the anterior and the lateral border, this distance being a little less than half the distance between the eyes; the frontal area nearly vertical at the sides, in the middle sloped at an angle of from 35 to 40 degrees, the median eyes thus looking forwards and upwards, the tubercle of these eyes normally high and separated from the anterior border by a space which is a little less than its longitudinal diameter; this border lightly emarginate, the teeth much stronger laterally, slightly upturned, the apex of the inferior median spine turned forwards and just visible when the carapace is viewed from above.

Terga sparsely granular.

Mandibles with a few granules above and a large external tubercle.

Chelæ moderately long and robust, the distance between the lateral eyes about two-thirds of the length of the femur and almost as long as the tarsus; the latter smooth externally, the femur and tibia coarsely, but not closely, granular: spines moderately long, the longest on the tibia greater than the width of the segment, but less than the distance between the lateral eyes; the longest on the femur equal to the height of the segment, but much less than the distance between the eyes.

Legs moderate; femur of the 1st a little shorter than twice the width of the carapace, that of the 2nd longer by about a quarter of its length than the width of the carapace; femur of the 3rd a little longer than that of the 2nd, which equals the femur and patella of the 4th; tibia of the 2nd about equal to the femur and more than twice the protarsus; tibia of the 3rd a little longer than the femur and more than twice the protarsus; the tibia of the 4th noticeably longer than the femur, the second and third segment, taken together, a little more than half the length of the first and almost equal to the protarsal, the second tibial nearly two-thirds the length of the third and a little more than half the distance between the eyes.

Measurements in millimetres.—Total length 21; median length of carapace 9, width of carapace 14, distance between lateral

eyes 4·5. *Chela*: height of femur 3, length 7·5, length of its longest spine 3; width of tibia 3·5, length 10·5, length of longest spine 4; length of tarsus 5. *Legs*: femur of 1st 26, of 2nd 18, of 3rd 19, of 4th 16; tibia of 2nd 18, of 3rd 20, of 4th 19.

Locality. Haiti (one example).

Easily recognizable from *T. Pallasii* in being smoother, having the carapace more abruptly sloped in front, the median tubercle nearer the edge, the median spine scarcely overlapped, the spines on the palpi much longer; the legs longer—*e. g.* the femur of the 2nd considerably exceeds the width of the carapace.

TARANTULA LONGIPES, sp. n. (Pl. XL. fig. 5.)

Colour (dry specimen). Carapace and chelæ deep chestnut, the former with a flavous patch above its postero-lateral edge; legs also deep castaneous, paler distally, with two obscure pale spots upon the femora; abdomen variegated with brown and yellow.

Carapace minutely granular, furnished with only a few coarse granules, the transverse and longitudinal groove deep; the area in front of the lateral eyes vertical laterally, convex mesially, and sloping downwards and forwards at an angle of about 45°, so that the anterior eyes look forwards; the distance between the median tubercle and the anterior border only slightly smaller than the longitudinal diameter of the tubercle; this border, when seen from above, narrow, very slightly emarginate, denticulate, the denticles larger at the side, directed horizontally; the apex of the median triangular frontal plate invisible from above; distance between the lateral ocular tubercles a little less than half the median length of the carapace and about twice the distance between either tubercle and the anterior border, and a little more than twice the distance between the tubercle and the lateral border.

Mandibles granular above, with two tubercles at the distal extremity of the basal joint, of which the external is the larger.

Chelæ long, slender, the distance between the lateral eyes about half the superior length of the femur, and less than the length of the tarsus; the latter smooth externally, the tibia and femur studded, but not very thickly, with coarse granules; the spines very long, the longest on the tibia greater than the distance between the lateral eyes, and much greater than the thickness of the tibia, the longest spine on the femur much

greater than the height of this segment and almost equal to the distance between the lateral ocular tubercles.

Legs very long: femur of the 1st twice and a half the width of the carapace; that of the 2nd longer than the width of the carapace by almost one-third of its length, considerably shorter than the femur of the 3rd, and scarcely longer than that of the 4th; tibia of the 2nd distinctly longer than the femur, that of the 3rd and 4th also very distinctly longer than the femora; in the 4th leg the 2nd and 3rd tibial segments are together longer than the protarsus, and two-thirds the length of the first tibial; the second tibial is about three-quarters the length of the third, and is equal to the distance between the lateral eyes.

Measurements in millimetres.—Total length 25; median length of carapace 9, width 13·5, distance between lateral eyes 4·5. *Chela*: height of femur 2·5, length 8·5, length of longest spine 3·5; width of tibia 3, length 11, length of longest spine 4·8; length of tarsus 5·5, of digit 5·2. *Legs*: femur of 1st 34, of 2nd 22, of 3rd 25, of 4th 21; tibia of 2nd 25, of 3rd 28, of 4th 27.

Locality. Haiti; a single example.

Resembling the preceding in having the eyes rather close together and in not being very coarsely granular, but easily recognizable by the strongly sloped frontal region of the carapace, the finer denticulation of its anterior border, longer chelæ and spines, much longer legs, &c.

Since describing the above dried example, I have come across two more specimens of the species, an adult female and a young, both preserved in alcohol, and both ticketed Brazil. The young example, a male, measures only 15 mm. long, and has the carapace only 8 mm. wide. It is paler in colour than the adults, and has the femora of the legs prettily mottled with yellow.

The adult female gives the following measurements:—Total length 32·5; carapace, median length 10·3, width 15, distance between eyes 5. *Chela*: length of femur 9, of tibia 12, of tarsus 7, of digit 6. *Legs*: femur of 1st 40, of 2nd 24·5, of 3rd 26·5, of 4th 23; the rest of the leg measurements are relatively the same as those of the type, which is a male.

TARANTULA LATIFRONS, sp. n. (Pl. XL. fig. 6.)

Colour fusco-castaneous; legs and abdomen lighter than the

carapace and chelæ; two postero-lateral spots on the carapace, and two, one posterior and lateral, the other submedian, on the principal terga. Upper surface of the trunk rather thickly studded with coarse granules.

Carapace flattish, its frontal portion lightly convex, and sloped downwards at an angle of less than 45° . The lateral eyes widely separated, the distance between them much greater than half the median length of the carapace, a little more than three times as great as the distance between one of the tubercles and the nearest point of the lateral border, and a little more than twice as great as the distance between the same tubercle and the antero-lateral border (angle). The median tubercle transverse, of medium height, separated from the anterior border by a space which is equal to quite twice its longitudinal diameter. The front border mesially depressed, very slightly emarginate, considerably overlapping the median process; the denticles moderately coarse laterally.

Mandibles almost smooth above, the external distal tubercle moderately prominent.

Chelæ moderately long, robust, granulation coarse on the femur, finer on the tibia; the distance between the lateral eyes equal to about four-fifths the length of the upperside of the tibia, and much greater than the length of the tarsus; the spines short, the longest on the tibia much less than the thickness of this segment, and scarcely half the length of the distance between the eyes; the longest on the femur less than the height of this segment, and rather shorter than the longest on the tibia. The spine-armature closely resembling that of *T. barbadosis*, but the upper edge of the tibia armed with only 7 spines, owing to the absence of the normal distal spinule, and the first superior spine on the tarsus very minute.

Legs: femur of 1st a little more than one-fourth greater than the width of the carapace, and a little more than twice its median length; the femur of the 2nd about equal to the width of the carapace, a little shorter than that of the 3rd, and a little longer than that of the 4th; tibia of the 2nd a little shorter than the femur, and just about twice the length of the protarsus; tibia of the 3rd a trifle longer than the femur, and more than twice the protarsus; the three tibial segments of the 4th a little longer than the femur, the second and third, taken together, about three-quarters the length of the first, and a little shorter

than the protarsal; the third tibial about twice the length of the second, which is about a third of the distance between the eyes.

Measurements in millimetres.—Total length 17·5; length of carapace along middle 8, width 12·5, distance between lateral eyes 5. *Chela*: height of femur 2·9, length 7, of its longest spine 2; width of tibia 3·6, length 9·5, of longest spine 2·5. *Legs*: femur of 1st 17, of 2nd 12, of 3rd 13, of 4th 11·3; tibia of 2nd 12, of 3rd 15·5, of 4th 12.

Locality. Haiti.

This species, perhaps, approaches nearer to *T. Goëssi* of Thorell than any known to me. The two seem to have the lateral eyes somewhat similarly placed, and in the last pair of legs the second and third tibial segments seem to bear the same proportion to one another. But Dr. Thorell, unfortunately, does not mention many of the characters upon which I think stress should be laid. His species, however, seems to differ in several points of measurement; for instance, the protarsus of the 4th leg is about one-third the length of the tibia (it is almost one-half the length in my species), and the tibia is considerably longer than the femur, whereas in my species the two segments are almost equal.

TARANTULA KEYSERLINGII, sp. n. (Pl. XL. fig. 7.)

Colour a uniform black.

Upper surface coarsely granular.

Carapace: distance between eyes greater than half the median length of the carapace; distance between each lateral eye-cluster and anterior border equal to half the distance separating the eyes, and much greater than the distance between the eyes in question and the lateral border; median tubercle transverse, separated from the anterior border by a wide space, which equals at least twice its longitudinal diameter. Anterior border lightly emarginate, coarsely dentate at the sides, concealing the frontal process.

Chelæ long, both tibia and femur coarsely granular above, robust; the tibia wider than its longest spine; the spine-arrangement almost exactly the same as in *T. barbadosis*, but owing to the greater length of the segments of the chelæ the spines on the femur and the superior proximal spines on the tibia are more isolated; moreover, the 1st superior tarsal spine is very minute; in its proximal half the tarsus is externally very distinctly granular.

Legs imperfect.

Measurements in millimetres.—Total length 27; carapace, width 11, median length 7·3, distance between eyes 4. *Chela*: length of femur 6·7, of tibia 9·5. *Legs*: femur of 1st 16·5, 2nd 12, 3rd 12·5, 4th 11·8.

Locality of type unknown; of a second smaller example, belonging apparently to the same species, Cuba.

The Cuban example, measuring 11 mm. long, with the carapace 7 mm. in width, appears to differ from the type merely in having the chelæ shorter, and therefore the spines closer together, and in having the external surface of the tarsus normally smooth.

In its character this species seems to lie between *T. scabra* and *T. latifrons*. From the latter it differs in having the lateral eyes less widely separated, the frontal border of the carapace narrower and more coarsely dentate, in the presence of 8 spines on the upper edge of the tibia of the chela, in the coarser granulation of this segment, &c. From *T. scabra*, *T. Keyserlingii* differs in having the median tubercle further from the anterior border, the lateral eyes more widely separated, the 1st spine on the tarsus of the chela smaller, and no spinule at the base of the 6th spine on the upper edge of the tibia.

This is very likely the Cuban species that is figured as *Phrynus palmatus* by Ramon de la Sagra.

TARANTULA VIRIDICEPS, sp. n. (Pl. XV. fig. 8.)

Colour (? young). Carapace and femora pale olive-green; abdomen darker, adorned with a pale spot marking each muscular impression, and one in the middle; mandibles, chelæ, tibiæ, and tarsi of legs ferruginous, the articulations on each side of the two principal joints of the legs of the 1st pair, *i. e.* between the femur and tibia, and the tibia and tarsus, yellow.

Carapace sparsely granular, with its frontal portion gently sloped downwards and forwards; the distance between the eyes less than half the median length of the carapace, and about twice the distance between a lateral cluster and the anterior edge, which is greater than the distance between the eye-cluster and the lateral edge; the median tubercle transverse, separated from the anterior margin by a space which equals nearly twice its longitudinal diameter; the anterior border mesially emarginate, with rounded lateral lobes, armed with about five teeth

on each side, considerably overlapping the frontal process, the apex of which is not visible from above.

Mandibles nearly smooth above, the two terminal tubercles slightly enlarged.

Chelæ robust, resembling those of *T. barbadensis*, but differing in the following particulars:—the spines on the trochanter are shorter, there are 9 spines instead of 8 on the upper edge of the tibia, the 3rd from the proximal end and the 4th from the distal end being the longest, as in *T. barbadensis*; but between these two spines there are *two* more in *T. viridiceps*, and only *one* in *T. barbadensis*.

Legs relatively longer as compared with the width of the carapace than in *T. barbadensis* (*cf.* measurements); 2nd tibia of 4th leg barely half the length of the 3rd, and equal to about one-third of the distance between the eyes.

Measurements in millimetres.—Total length 13 mm., width of carapace 9·3, median length 6, distance between eyes 3·5. *Chelæ*: length of femur 4·2, of tibia 6·2; width of latter 3, length of longest spine 2. *Legs*: femur of 1st 16, of 2nd 11, of 3rd 11·5, of 4th 9·8; tibia of 2nd 10, of 3rd 11·5, of 4th 11.

Locality. Bahamas (*Mrs. Blake*).

This species differs from all the West-Indian species known to me in the armature of the upper edge of the tibial segment of the chela.

In addition to the species described above the British Museum has one example allied to *T. Keyserlingii*, but too young to identify, from Jamaica (*P. H. Gosse*), and another allied to *T. tessellata*, from Dominica (*G. A. Ramage*).

The following species are, so far as I can ascertain, unknown to me:—

TARANTULA BENIFORMIS (*Linn.*), *Syst. Nat.* ed. 10, p. 619.

Locality. Antigua.

Judging from the proximity of Montserrat to Antigua, the species I have characterized as *T. Pallasii* (Bl.) will perhaps prove to be synonymous with *T. reniformis*.

TARANTULA MARGINE-MACULATA (*C. Koch*), *Die Arachn.* viii. p. 6, fig. 597.

Locality. West Indies.

This species should apparently fall under section *a*¹ of the above table, but nearer than this I am unable to place it.

TARANTULA GOËSII (*Thorell*), *Ann. Mus. Genov.* (2) vii. p. 530.
Locality. St. Bartholomew.

ADDITIONAL NOTE to p. 526.—Whilst this paper was in the press I received from Mr. W. R. Elliott another specimen of a *Peripatus* from Dominica. It was found amongst rotten tree-stumps at an altitude of about 500 ft., close to the house on the Hatton Hall Estate, at Prince Rupert's.

Like the three examples already mentioned (p. 522), which were sent by Mr. Ramage from Laudat in the same island, this specimen possesses 30 pairs of legs. None of the posterior legs bear accessory tubercles, and we may conclude that the example is a female. The colour of the lower surface is greyish brown or a grey mud-coloured fawn; that of the upper surface is nearly the same, but a distinctly speckled pinkish tint is imparted to the skin by the brick-red colour of most of the primary papillæ. The pink tint fades away towards the anterior end behind the head, and the antennæ are approximately of the same colour throughout as this region of the body. The primary papillæ are, for the most part at least, contracted and conical, and I did not succeed in counting more than eight minor teeth on the inner blade of the jaw of the right side.

The length is 46 mm. and the width about 3·5. This specimen appears to me to be co-specific with those Dominican individuals identified above as *P. trinidadensis*.

EXPLANATION OF THE PLATES.

PLATE XXXVII.

- Fig. 1. *Polyxenus longisetis*, sp. n. : $\times 12$.
 2. *Glomeridesmus marmoreus*, sp. n. : $\times 6$.
- | | | | | |
|------|---|---|---|---------------------------------|
| 2 a. | " | " | " | lateral view of head. |
| 2 b. | " | " | " | front view of head. |
| 2 c. | " | " | " | antenna. |
| 2 d. | " | " | " | gnathochilarium. |
| 2 e. | " | " | " | depression above antenna. |
| 2 f. | " | " | " | lateral view of a tergite. |
| 2 g. | " | " | " | inferior view of a segment. |
| 2 h. | " | " | " | inferior view of last segment. |
| 2 i. | " | " | " | lateral view of the same. |
| 2 k. | " | " | " | leg of posterior pair. |
| 2 l. | " | " | " | penes, with legs of third pair. |
| 2 m. | " | " | " | tip of penis. |

Fig. 3. *Stemmiulus ceylonicus*, Pocock, lateral view of head.

- 3 a. " " " gnathochilarium.
 3 b. " " " lateral view of a tergite.
 3 c. " " " inferior view of somite with left leg of
 anterior pair removed.
 4. *Siphonophora tenuicornis*, sp. n., head from the side.
 5. *Siphonotus purpureus*, sp. n., head from before.
 6. *Thyroproctus Townsendi*, gen. et sp. n., anterior end of body from the side
 6 a. " " " posterior end from the side.
 6 b. " " " posterior end from below.
 6 c. " " " copulatory organ.

PLATE XXXVIII.

Fig. 1. *Spirostreptus antillanus*, sp. n., ♀, head from the side: $\times 1\frac{1}{2}$.

- 1 a. " " " ♀, median segment from the side.
 1 b. " " " ♀, anal segment from the side.
 1 c. " " " ♂, head from the side: $\times 1\frac{1}{2}$.
 1 d. " " " ♂, copulatory apparatus from the front.
 2. *Rhinocericus Gossei*, sp. n., copulatory apparatus.
 3. " *macropus*, sp. n., anterior end from the side: $\times 1\frac{1}{2}$.
 3 a. " " " two median segments from the side.
 3 b. " " " posterior end from the side.
 3 c. " " " posterior end from above.
 3 d. " " " copulatory apparatus.
 4. " *arboreus* (Sauss.), copulatory apparatus.
 5. " *Maltzani*, sp. n., posterior end of body: $\times 2$.
 5 a. " " " copulatory apparatus.
 5 b. " " " anterior legs of ♂.
 6. " *solitarius*, sp. n., copulatory apparatus.
 7. " *consociatus*, sp. n., copulatory apparatus.
 8. " *leucostigma*, sp. n., copulatory apparatus.
 9. " *serpentinus*, sp. n., copulatory apparatus.
 10. " *vincentii*, sp. n., copulatory apparatus.
 11. " *grenadensis*, sp. n., copulatory apparatus.
 12. " *sabulosus*, sp. n., copulatory apparatus.

PLATE XXXIX.

Fig. 1. *Cyclodesmus porcellanus*, sp. n., anterior end from the side.

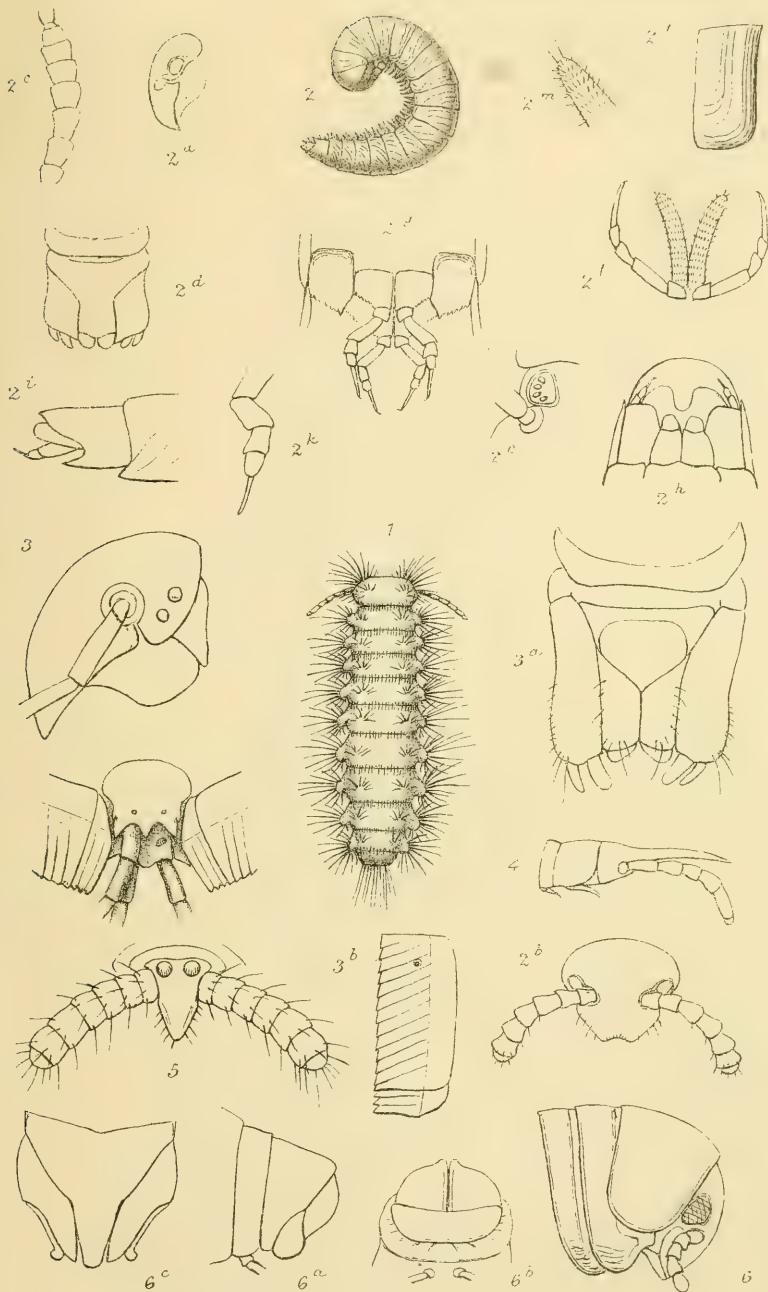
- 1 a. " " " posterior end from the side.
 2. *Cryptodesmus vincentii*, sp. n., anterior end from above: $\times 6$.
 2 a. " " " 9th segment from above.
 2 b. " " " posterior segment from above.
 2 c. " " " head from before.
 2 d. " " " left copulatory foot from outside.
 3. *Platyrhachus luciae*, sp. n., anterior end from above: $\times 2$.
 3 a. " " " 11th and 12th segments from above: $\times 2$.
 3 b. " " " posterior end from above: $\times 2$.

Fig. 3 c. *Platyrhachus luciae*, sp. n., tail.

- 3 d. " " " copulatory foot from outside.
 4. *Odontopeltis vincentii*, sp. n., anterior end from above: $\times 6$.
 4 a. " " " 11th and 12th segments from above: $\times 6$.
 4 b. " " " posterior end from above: $\times 6$.
 4 c. " " " left copulatory foot from below.
 4 d. " " " copulatory foot from the side.
 5. " *morantus*, Karsch, left copulatory foot from outside.
 5 a. " " " 14th and 15th segments from above: $\times 8$.
 6. " *verrucosus*, sp. n., anterior end from above: $\times 6$
 6 a. " " " 11th and 12th segments from above: $\times 6$.
 6 b. " " " posterior end from above: $\times 6$.
 6 c. " " " right copulatory foot from outside.
 6 d. " " " right copulatory foot from inside.
 7. " *formosus*, sp. n., 11th and 12th segments: $\times 6$.
 8. " *mammatus*, sp. n., 11th and 12th segments: $\times 6$.
 8 a. " " " left copulatory foot from inside.
 8 b. " " " apex of same from above.

PLATE XL.

- Fig. 1. *Tarantula barbadensis*, sp. n., carapace and chela: $\times 1\frac{1}{2}$.
 2. " *tessellata*, sp. n., nat. size, ♂.
 3. " *Pallasii*, Blanch., carapace and chela: $\times 1\frac{1}{2}$.
 3 a. " " " distal spines of upperside of tibia.
 4. " *spinimana*, sp. n., carapace and chela: $\times 1\frac{1}{2}$.
 4 a. " " " tarsus of chela from below.
 5. " *longipes*, sp. n., carapace and chela: $\times 1\frac{1}{2}$.
 6. " *latifrons*, sp. n., carapace and chela: $\times 1\frac{1}{2}$.
 7. " *Keyserlingii*, sp. n., carapace and chela: $\times 1\frac{1}{2}$.
 8. " *viridiceps*, sp. n., carapace and chela: $\times 1\frac{1}{2}$.
-



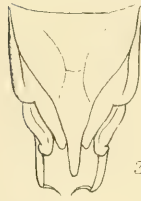
Barjeau & Highley del. et lith.

West, Newman imp.

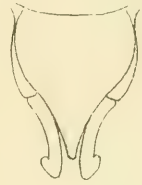
DIPLOPODA FROM WEST INDIES.



1^d



3^d



4



1^b



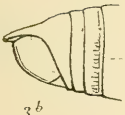
1^a



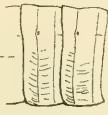
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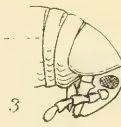
1^c



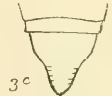
3^b



3^a



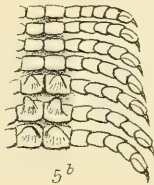
3



3^c



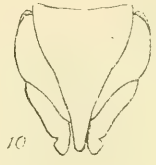
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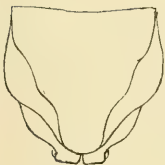
5^b



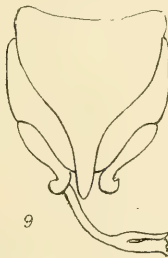
5^a



10



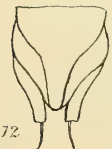
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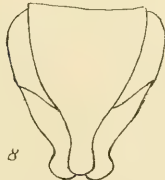
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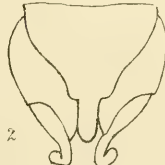
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12



8



2

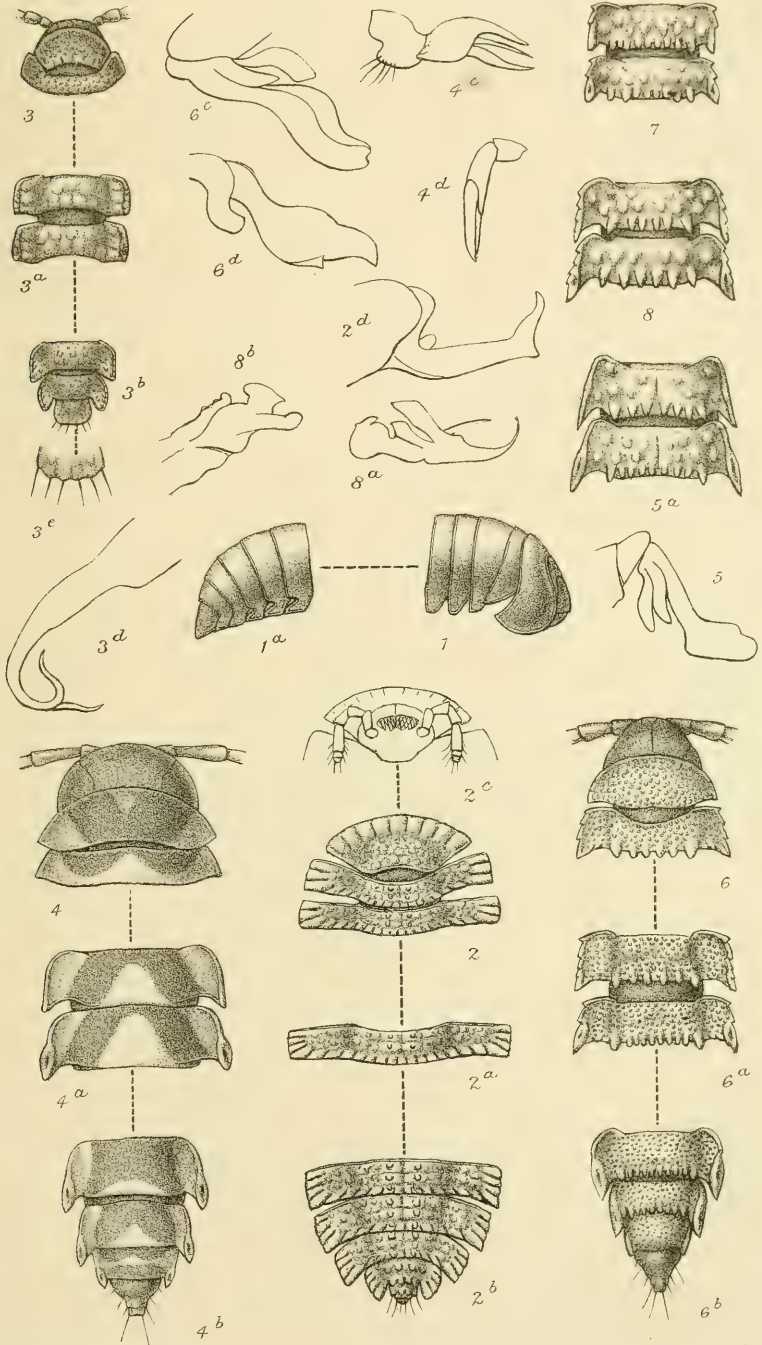


11

Berjeau & Highley del. et lith.

West, Newman imp.

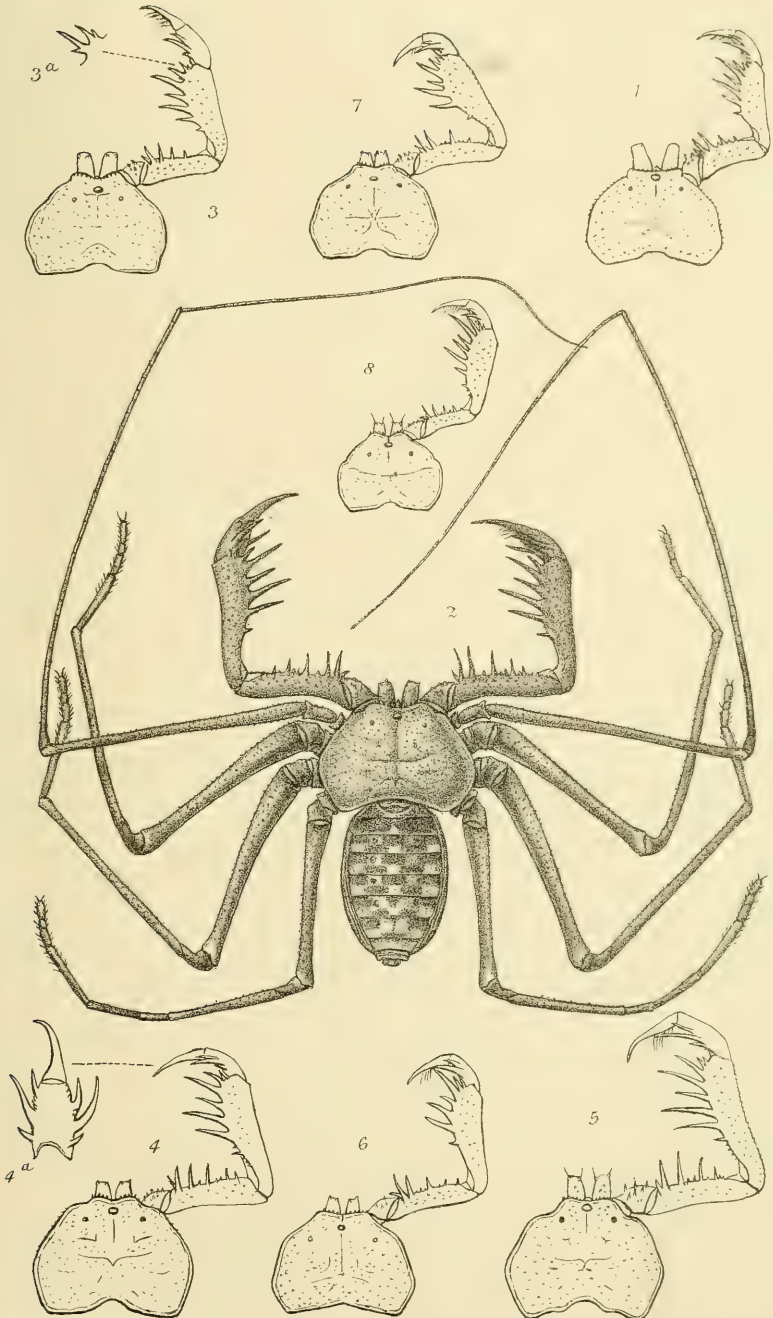
DIPLOPODA FROM WEST INDIES.



Berjeau & Highley del et lith.

West Newman imp.

DIPLOPODA FROM WEST INDIES.



Berjeau & Highley del. et lith.

West Newman imp.

PEDIPALPI FROM WEST INDIES.